Longitudinal Employer - Household Dynamics

Technical paper No. TP-2002-05 (rev1)

The Longitudinal Employer-Household Dynamics Program: Employment Dynamics Estimates Project Versions 2.2 and 2.3

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1.1 Introduction to the Primer

This Primer introduces users of the Employment Dynamics Estimates (EDE) to the concepts used by the Longitudinal Employer-Household Dynamics Program to develop and report these estimates. The Primer describes the definitions of employer, employee, job, and all associated worker flow, job flow, and earnings measures.

1.2 Fundamental Concepts

1.2.1 Dates

The EDE is a quarterly data system with calendar year timing. We use the notation YYYY:Q to refer to a year and quarter combination. For example, 1999:4 refers to the fourth quarter of 1999, which includes the months October, November, and December.

1.2.2 Employer

An employer in the EDE system consists of a single Unemployment Insurance (UI) account in a given state's UI wage reporting system. For statistical purposes the EDE system creates an employer identifier called an State Employer Identification Number (SEIN) from the UI-account number and information about the state (FIPS code). Thus, within the EDE system, the SEIN is a unique identifier within and across states but the entity to which it refers is a UI account.

1.2.3 Employee

Individual employees are identified by their Social Security Numbers (SSN) on the UI wage records that provide the input to the EDE. To protect privacy and confidentialty of the SSN and the individual's name, a different branch of the Census Bureau removes the name and replaces the SSN with an internal Census identifier called a Protected Identity Key (PIK).

1.2.4 Job

The EDE system definition of a job is the association of an individual (PIK) with an employer (SEIN) in a given year and quarter. The EDE system stores the entire history of every job that an individual holds. Estimates are based on the definitions presented below, which formalize how the EDE system estimates the start of a job (accession), employment status (beginning- and end-of-quarter employment), continuous employment (full-quarter employment), the end of a job (separation), and average earnings for different groups.

1.2.5 Unemployment Insurance wage records (the EDE system universe)

The Employment Dynamics Estimates are built upon concepts that begin with the report of an individual's UI-covered earnings by an employing entity (SEIN). An individual's UI wage record enters the EDE system if at least one employer reports earnings of at least one dollar for that individual (PIK) during the quarter. Thus, the job must produce at least one dollar of UI-covered earnings during a given quarter to count in the EDE system. The presence of this valid UI wage record in the EDE system triggers the beginning of calculations that estimate whether that individual was employed at the beginning of the quarter, at the end of the quarter, and continuously throughout the quarter. These designations are discussed below. Once these point-in-time employment measures have been estimated for the individual, further analysis of the individual's wage records results in estimates of full-quarter employment, accessions, separations (point-in-time and full-quarter), job creations and destructions, and a variety of full-quarter average earnings measures.

1.2.6 Employment at a point in time

Employment is estimated at two points in time during the quarter, corresponding to the first and last calendar days. An individual is defined as employed at the beginning of the quarter when that individual has valid UI wage records for the current quarter and the preceding quarter. Both records must apply to the same employer (SEIN). An individul is defined as employed at the end of the quarter when that individual has valid UI wage records for the current quarter and the subsequent quarter. Again, both records must show the same employer. The EDE system uses beginning and end of quarter employment as the basis for constructing worker and job flows. In addition, these measures are used to check the external consistency of the data, since a variety of employment estimates are available as point-in-time measures. Many federal statistics are based upon estimates of employment as of the 12th day of particular months. The Census Bureau uses March 12 as the reference date for employment measures contained in its Business Register and on the Economic Censuses and Surveys. The BLS "Covered Employment and Wages (CEW)" series, which is based on the ES-202 data, use the 12th of each month as the reference date for employment. The EDE system cannot use exactly the same reference date as these other systems because UI wage reports do not specify additional detail regarding the timing of these payments. EDE research has shown that the point-in-time definitions used to estimate beginning and end of quarter employment track the CEW month one employment estimates well at the level of an employer (SEIN).

1.2.7 Employment for a full quarter

The concept of full quarter employment estimates individuals who are likely to have been continuously employed throughout the quarter at a given employer. An indivdual is defined as full-quarter-employed if that individual has valid UI-wage records in the current quarter, the preceding quarter, and the subsequent quarter at the same employer (SEIN). That is, in terms of the point-in-time definitions, if the individual is employed at the same employer at both the beginning and end of the quarter, then the individual is considered full-quarter employed in the EDE system. Consider the following example. Suppose that an individual has valid UI wage records at employer *A* in 1999:2, 1999:3, and 1999:4. This individual does not have a valid UI wage record at employer *A* in 1999:1 or 2000:1. Then, according to the definitions above, the individual is employed at the end of 1999:2, the beginning and end of 1999:3, and the beginning of 1999:4 at employer *A*. The EDE system treats this individual as a full-quarter employee in 1999:3 but not in 1999:2 or 1999:4. Full-quarter status is not defined for either the first or last quarter of available data.

1.2.8 Point-in-time estimates of accession and separation

An accession occurs in the EDE system when it encounters the first valid UI wage record for a job (an individual (PIK)-employer (SEIN) pair). Accessions are not defined for the first quarter of available data from a given state. The EDE definition of an accession can be interpreted as an estimate of the number of new employees added to the payroll of the employer (SEIN) during the quarter. The individuals who acceded to a particular employer were not employed by that employer during the previous quarter but received at least one dollar of UI-covered earnings during the quarter of accession.

A separation occurs in the current quarter of the EDE system when it encounters no valid UI wage record for an individual-employer pair in the subsequent quarter. This definition of separation can be interpreted as an estimate of

the number of employees who left the employer during the current quarter. These individuals received UI-covered earnings during the current quarter but did not receive any UI-covered earnings in the next quarter from this employer. Separations are not defined for the last quarter of available data.

1.2.9 Accession and separation from full-quarter employment

Full-quarter employment is not a point-in-time concept. Full-quarter accession refers to the quarter in which in individual first attains full-quarter employment status at a given employer. Full-quarter separation occurs in the last full-quarter that an individual worked for a given employer.

As noted above, full-quarter employment refers to an estimate of the number of employees who were employed at a given employer during the entire quarter. An accession to full-quarter employment, then, involves two additional conditions that are not relevant for ordinary accessions. First, the individual (PIK) must still be employed at the end of the quarter at the same employer (SEIN) for which the ordinary accession is defined. At this point (the end of the quarter where the accession occured and the beginning of the next quarter) the individual has acceded to continuing-quarter status. An accession to continuing-quarter status means that the individual acceded in the current quarter and is end-of-quarter employed. Next the EDE system must check for the possibility that the individual becomes a full-quarter employee in the subsequent quarter. An accession to full-quarter status occurs if the individual acceded in the previous quarter, and is employed at both the beginning and end of the current quarter. Consider the following example. An individual's first valid UI wage record with employer *A* occurs in 1999:2. The individual, thus acceded in 1999:2. The same individual has a valid wage record with employer *A* in 1999:3. The EDE system treats this individual as end-of-quarter employed in 1999:2 and beginning of quarter employed in 1999:3. The individual, thus, acceded to continuing-quarter status in 1999:2. If the individual also has a valid UI wage record at employer *A* in 1999:4, then the individual is full-quarter employed in 1999:3. Since 1999:3 is the first quarter of full-quarter employment, the EDE system considers this individual an accession to full-quarter employment in 1999:3.

Full-quarter separation works much the same way. One must be careful about the timing, however. If an individual separates in the current quarter, then the EDE system looks at the preceding quarter to determine if the individual was employed at the beginning of the current quarter. An individual who separates in a quarter in which that person was employed at the beginning of the quarter is a separation from continuing-quarter status in the current quarter. Finally, the EDE system checks to see if the individual was a full-quarter employee in the preceding quarter. An indivdidual who was a full quarter employee in the previous quarter is treated as a full-quarter separation in the quarter in which that person actually separates. Note, therefore, that the definition of full-quarter separation preserves the timing of the actual separation (current quarter) but restricts the estimate to those individuals who were full-quarter status in the preceding quarter. For example, suppose that an individual separates from employer *A* in 1999:3. This means that the individual had a valid UI wage record at employer *A* in 1999:3 but did not have a valid UI wage record at employer *A* in 1999:4. The separation is dated 1999:3. Suppose that the individual had a valid UI wage record at employer *A* in 1999:2. Then, a separation from continuing quarter status occured in 1999:3. Finally, suppose that this individual had a valid UI wage record at employer *A* in 1999:1. Then, this individual was a full-quarter employee at employer *A* in 1999:2. The EDE system records a full-quarter separation in 1999:3.

1.2.10 Point-in-time estimates of new hires and recalls

The EDE system refines the concept of accession into two subcategories: new hires and recalls. In order to do this, the EDE system looks at a full year of wage record history prior to the quarter in which an accession occurs. If there are no valid wage records for this job (PIK-SEIN) during the four quarters preceding an accession, then the accession is called a new hire; otherwise, the accession is called a recall. Thus, new hires and recalls sum to accessions. For example, suppose that an individual accedes to employer *A* in 1999:3. Recall that this means that there is a valid UI wage record for the individual 1 at employer *A* in 1999:3 but not in 1999:2. If there are also no valid UI wage records for individual 1 at employer *A* for 1999:1, 1998:4 and 1998:3, then the EDE system designates this accession as a new hire of individual 1 by employer *A* in 1999:3. Consider a second example in which individual 2 accedes to employer *B* in 2000:2. Once again, the accession implies that there is not a valid wage record for individual 2 at employer *B* in 2000:1. If there is a valid wage record for individual 2 at employer *B* in 1999:4, 1999:3, or 1999:2, then the EDE system designates the accession of individual 2 to employer *B* as a recall in 2000:2. New hire and recall data, because they depend upon having four quarters of historical data, only become available one year after the data required to estimate accessions become available.

1.2.11 New hires and recalls to and from full-quarter employment

Accessions to full-quarter status can also be decomposed into new hires and recalls. The EDE system accomplishes this decomposition by classifying all accession to full-quarter status who were classified as new hires in the previous quarter as new hires to full-quarter status in the current quarter. Otherwise, the accession to full-quarter status is classified as a recall to full-quarter status. For example, if individual 1 accedes to full-quarter status at employer *A* in 1999:4 then, according to the definitions above, individual 1 acceded to employer *A* in 1999:3 and reached full-quarter status in 1999:4. Suppose that the accession to employer *A* in 1999:3 was classified as a new hire, then the accession to full quarter status in 1999:4 is classified as a full-quarter new hire. For another example, consider individual 2 who accedes to full-quarter status at employer *B* in 2000:3. Suppose that the accession of individual 2 to employer *B* in 2000:2, which is implied by the full-quarter accession in 2000:3, was classified by the EDE system as a recall in 2000:2; then, the accession of individual 2 to full-quarter status at employer *B* in 2000:3 is classified as a recall to full-quarter status.

1.2.12 Job creations and destructions

Job creations and destructions are defined at the employer (SEIN) level and not at the job (PIK-SEIN) level. To construct an estimate of job creations and destructions, the EDE system totals beginning and ending employment for each quarter for every employer in the UI wage record universe, that is, for an employer who has at least one valid UI wage record during the quarter. The EDE system actually uses the Davis, Haltiwanger & Schuh (1996) formulas for job creation and destruction (which are given formally in Chapter 7 on page 114).

We use a simplified definition in this primer. If end-of-quarter employment is greater than beginning-of-quarter employment, then the employer has created jobs. The EDE system sets job creations in this case equal to end-of-quarter employment less beginning-of-quarter employment. The estimate of job destructions in this case is zero. On the other hand, if beginning-of-quarter employment exceeds end-of-quarter employment, then this employer has destroyed jobs. The EDE system computes job destructions in this case as beginning-of-period employment less end-of-period employment. The EDE system sets job creations to zero in this case. Notice that either job creations are positive or job destructions are postive, but not both. Job creations and job destructions can simultaneously be zero if beginning-of-quarter employment equals end-of-quarter employment. There is an important subtly regarding job creations and destructions when they are computed for different sex and age groups within the same employer. There can be creation and destruction of jobs for certain demographic groups within the employer without job creation or job destruction occuring overall. That is, jobs can be created for some demographic groups and destroyed for others even at enterprises that have no change in employment as a whole.

Here is a simple example. Suppose employer *A* has 250 employees at the beginning of 2000:3 and 280 employees at the end of 2000:3. Then, employer *A* has 30 job creations and zero job destructions in 2000:3. Now suppose that of the 250 employees 100 are men and 150 are women at the beginning of 2000:3. At the end of the quarter suppose that there are 135 men and 145 women. Then, job creations for men are 35 and job destructions for men are 0 in 2000:3. For women in 2000:3 job creations are 0 and job destructions are 5. Notice that the sum of job creations for the employer by sex (35 + 0) is not equal to job creations for the employer as a whole (30) and that the sum of job destructions by sex (0 + 5) is not equal to job destructions for the employer as a whole.

1.2.13 Net job flows

Net job flows are also only defined at the level of an employer (SEIN). They are the difference between job creations and job destructions. Net job flows are, thus, always equal to end-of-quarter employment less beginning of quarter employment.

Returning to the example in the description of job creations and destructions. Employer *A* has 250 employees at the beginning of 2000:3 and 280 employees at the end of 2000:3. Net job flows are 30 (job creations less job destructions or beginning-of-quarter employment less end-of-quarter employment). Suppose, once again that employment of men goes from 100 to 135 from the beginning to the end of 2000:3 and employment of women goes from 150 to 145. Notice, now, that net job flows for men (35) plus net job flows for women (-5) equals net job flows for the employer as a whole (30). Net job flows are additive across demographic groups even though gross job flows (creations and destructions) are not.

Some useful relations among the worker and job flows include:

- Net job flows = job creations - job destructions
- Net job flows = end-of-quarter employment - beginning-of-period employment
- Net job flows = accessions - separations

These relations hold for every demographic group and for the employer as a whole. Additional identities are shown in Chapter 7.

1.2.14 Full-quarter job creations, job destructions and net job flows

The EDE system applies the same job flow concepts to full-quarter employment to generate estimates of full-quarter job creations, full-quarter job destructions, and full-quarter net job flows. Full-quarter employment in the current quarter is compared to full-quarter employment in the preceding quarter. If full-quarter employment has increased between the preceding quarter and the current quarter, then full-quarter job creations are equal to full-quarter employment in the current quarter less full-quarter employment in the preceding quarter. In this case full-quarter job destructions are zero. If full-quarter employment has decreased between the previous and current quarters, then full-quarter job destructions are equal to full-quarter employment in the preceding quarter minus full-quarter employment in the current quarter. In this case, full-quarter job destructions are zero. Full-quarter net job flows equal full-quarter job creations minus full-quarter job destructions. The same identities that hold for the regular job flow concepts hold for the full-quarter concepts.

1.2.15 Average earnings of end-of-period employees

The average earnings of end-of-period employees is estimated by first totaling the UI wage records for all individuals who are end-of-period employees at a given employer in a given quarter. Then the total is divided by the number of end-of-period employees for that employer and quarter.

1.2.16 Average earnings of full-quarter employees

Measuring earnings using UI wage records in the EDE system presents some interesting challenges. The earnings of end-of-quarter employees who are not present at the beginning of the quarter are the earnings of accessions during the quarter. The EDE system does not provide any information about how much of the quarter such individuals worked. The range of possibilities goes from 1 day to every day of the quarter. Hence, estimates of the average earnings of such individuals may not be comparable from quarter to quarter unless one assumes that the average accession works the same number of quarters regardless of other conditions in the economy. Similarly, the earnings of beginning-of-quarter who are not present at the end of the quarter represent the earnings of separations. These present the same comparison problems as the average earnings of accessions; namely, it is difficult to model the number of weeks worked during the quarter. If we consider only those individuals employed at the firm in a given quarter who were neither accessions nor separations during that quarter, we are left, exactly, with the full-quarter employees, as discussed above.

The EDE system measures the average earnings of full-quarter employees by summing the earnings on the UI wage records of all individuals at a given employer who have full-quarter status in a given quarter then dividing by the number of full-quarter employees. For example, suppose that in 2000:2 employer *A* has 10 full-quarter employees and that their total earnings are $\$300,000$. Then, the average earnings of the full-quarter employees at *A* in 2000:2 is $\$30,000$. Suppose, further that 6 of these employees are men and that their total earnings are $\$150,000$. So, the average earnings of full-quarter male employees is $\$25,000$ in 2000:2 and the average earnings of female full-quarter employees is $\$37,500$ $(= \$150,000/4)$.

1.2.17 Average earnings of full-quarter accessions

As discussed above, a full-quarter accession is an individual who acceded in the preceding quarter and acheived full-quarter status in the current quarter. The EDE system measures the average earnings of full-quarter accessions in a given quarter by summing the UI wage record earnings of all full-quarter accessions during the quarter and dividing by the number of full-quarter accessions in that quarter.

1.2.18 Average earnings of full-quarter new hires

Full-quarter new hires are accessions to full-quarter status who were also new hires in the preceding quarter. The average earnings of full-quarter new hires are measured as the sum of UI wage records for a given employer for all full-quarter new hires in a given quarter divided by the number of full-quarter new hires in that quarter.

1.2.19 Average earnings of full-quarter separations

Full-quarter separations are individuals who separate during the current quarter who were full-quarter employees in the previous quarter. The EDE system measures the average earnings of full-quarter separations by summing the earnings for all individuals who are full-quarter status in the current quarter and who separate in the subsequent quarter. This total is then divided by full-quarter separations in the subsequent quarter. The average earnings of full-quarter separations is, thus, the average earnings of full-quarter employees in the current quarter who separated in the next quarter. Note the dating of this variable.

1.2.20 Average periods of non-employment for accessions, new hires, and recalls

As noted above an accession occurs when a job starts; that is, on the first occurance of an SEIN-PIK pair following the first quarter of available data. When the EDE system detects an accession, it measures the number of quarters (up to a maximum of four) that the individual spent non-employed in the state prior to the accession. The EDE system estimates the number of quarters spent non-employed by looking for all other jobs held by the individual at any employer in the state in the preceding quarters up to a maximum of four. If the EDE system doesn't find any other valid UI-wage records in a quarter preceding the accession it augments the count of non-employed quarters for the individual who acceded, up to a maximum of four. Total quarters of non-employment for all accessions is divided by accessions to estimate average periods of non-employment for accessions.

Here is a detailed example. Suppose individual 1 and individual 2 accede to employer *A* in 2000:1. In 1999:4, individual *A* does not work for any other employers in the state. In 1999:1 through 1999:3 individual 1 worked for employer *B*. Individual 1 had one quarter of non-employment preceding the accession to employer *A* in 2000:1. Individual 2 has no valid UI wage records for 1999:1 through 1999:4. Indivdiual 2 has four quarters of non-employment preceding the accession to employer *A* in 2000:1. The accessions to employer *A* in 2000:1 had an average of 2.5 quarters of non-employment in the state prior to accession.

Average periods of non-employment for new hires and recalls are estimated using exactly analogous formulas except that the measures are estimated separately for accesions who are also new hires as compared with accession who are recalls.

1.2.21 Average number of periods of non-employment for separations

Analogous to the average number of periods of non-employment for accessions prior to the accession, the EDE system measures the average number of periods of non-employment in the state for individuals who separated in the current quarter, up to a maximum of four. When the EDE system detects a separation, it looks forward for up to four quarters to find valid UI wage records for the individual who separated and other employers in the state. Each quarter that it fails to detect any such jobs is counted as a period of non-employment, up to a maximum of four. The average number of periods of non-employment is estimated by dividing the total number of periods of non-employment for separations in the current quarter by the number of separations in the quarter.

1.2.22 Average changes in total earnings for accessions and separations

The EDE system measures the change in total earnings for individuals who accede or separate in a given quarter. For an individual accession in a given quarter, the EDE system computes total earnings from all valid wage records for all of the individual's employers in the preceding quarter. The system then computes the total earnings for the same individual for all valid wage records and all employers in the current quarter. The acceding individual's change in earnings is the difference between the current quarter earnings from all employers and the preceding quarter earnings from all employers. The average change in earnings for all accessions is the total change in earnings for all accesions divided by the number of accessions.

The EDE system computes the average change in earnings for separations in an analogous manner. The system computes total earnings from all employers for the separating indivdiual in the current quarter and subtracts total earnings from all employers in the subsequent quarter. The average change in earnings for all separations is the total change in earnings for all separations divided by the number of separations.

Here is an example for the average change in earnings of accessions. Suppose individual 1 accedes to employer *A* in 2000:3. Earnings for individual 1 at employer *A* in 2000:3 are $\$8,000$. Individual 1 also worked for employer *B* in 2000:2 and 2000:3. Individual 1's earnings at employer *B* were $\$7,000$ and $\$3,000$ in in 2000:2 and 2000:3, respectively. Individual 1's change in total earnings between 2000:3 and 2000:2 was $\$4,000\,(=\$8,000+\$3,000-\$7,000)$. Individual 2 also acceded to employer *A* in 2000:3. Individual 2 earned $\$9,000$ from employer *A* in 2000:3. Individual 2 had no other employers during 2000:2 or 2000:3. Individual 2's change in total earnings is $\$9,000$. The average change in earnings for all of employer *A*'s accessions is $\$6,500\,(=(\$4,000+\$9,000)/2)$, the average change in total earnings for individuals 1 and 2.

1.3 Forming Aggregated Estimates

Aggregating the EDE data is a four step process:

1. The basic variables, as discussed above, are created for each employment history (PIK-SEIN pair) and for every quarter that the pair exits.
2. The EDE system sums for each employer the following variables: beginning-of-period employment, end-of-period employment, accessions, new hires, recalls, separations, full-quarter employment, full-quarter accessions, full-quarter new hires, total earnings of full-quarter employees, total earnings of full-quarter accessions, and total earnings of full-quarter new hires. Job creations, job destructions, and net job flows are estimated for each employer using the beginning and end of quarter employment estimates for that employer. The first-layer of disclosure-proofing is also applied at this step.
3. The employer-level variables in the list above are summed over the relevant aggregating unit (county or SIC division) for each quarter. Average earnings of full-quarter employees, full-quarter accessions, and full-quarter new hires are estimated by taking the ratio of total earnings of the relevant category to the total number of individuals in that category. For example, aveargе earnings of full-quarter men ages 55-64 for a given year, quarter and county is the ratio of total earnings of full-quarter men ages 55-64 to the number of full-quarter men ages 55-64 in that year, quarter, and county.
4. The beginning-of-quarter employment for each county or SIC division is controlled (raked) to the BLS estimate of total county employment in month one of that quarter from the Covered Employment and Wages series. At this point the other estimates and the demographic groups are also raked to preserve the underlying relations among the variables.

1.4 Introduction to Disclosure Proofing the EDE

Disclosure proofing is the set of methods used by statistical agencies to protect the confidentiality of the identity of and information about the individuals and businesses that form the underlying data in the system. In the EDE system, disclosure proofing is required to protect the information about individuals and businesses that contribute to the UI wage records, the ES-202 quarterly reports, and the Census Bureau demographic data that have been integrated with these sources. There are three layers of and disclosure proofing in the EDE system.

The first layer occurs at stage two in the production of the estimates, the stage at which employer-level estimates are made. At this stage, the EDE system infuses specially constructed noise into the estimates of all of the employer-level measures. This noise is designed to have two very important properties. First, for a given employer, the data are always distorted in the same direction (increased or decreased) by the same percentage amount in every period. Second, the statistical properties of this distortion are such that when the estimates are aggregated to the county or SIC division level the effects of the distortion cancel out for the vast majority of the estimates.

The second layer of confidentiality protection occurs when the employer-level measures are aggregated to the county or SIC division level. The data from many individuals and businesses are combined into a (relatively) few

estimates. This aggregation helps to conceal the exact information about any of the individuals or businesses that underlie the estimate. At this level of confidentiality protection, some of the estimates turn out to be based on fewer than three persons. These estimates are suppressed. In addition, some of the estimates are based on data that are still substantially influenced by the noise that was infused in the first layer. These estimates are flagged as substantially distorted.

The final layer of confidentiality protection occurs when the beginning-of-quarter employment estimate for the county or SIC division as a whole is raked to the published BLS estimates from the Covered Employment and Wages series. This raking has two effects. First, aggregates that the BLS suppresses (because of conditions in its disclosure-proofing system) are also suppressed by the EDE system. Second, the EDE system does not produce an independent estimate of overall employment for the aggregate. The EDE system, thus supplements the Covered Employment and Wages program by providing worker flows, job flows, full-quarter employment estimates, and demographic detail, none of which can be easily estimated from the ES-202 quarterly reports themselves. The final layer of confidentiality protection is not applied to the full-quarter estimates (employment, flows and average earnings) because there is no comparable estimate produced by the BLS from ES-202 data.

1.5 Summary Variable Definitions

1.5.1 Timing and Category Variables

Timing and categorical variables are used to describe the population and time period that the content variables cover. The first such variable is STATE, which is the two-digit FIPS code for the state upon which the employment dynamics estimates are based. The next two variables (YEAR and QUARTER) refer to the calendar year and quarter covered by the content variables. The COUNTY variable (county-level data file) is the three-digit FIPS code for the county (within the state). The SIC_DIVISION variable (sic-division-level data file) is the one-character SIC (1987) major industry group. The SEX variable indicates whether the data cover men or women. The AGEGROUP variable indicates which of the eight age categories the data cover.

1.5.2 Content Variables

The quarterly employment estimates for beginning of quarter employment are contained the variable B and the estimates for end of quarter employment are found in the variable E. Accessions are reported in the variable A. New hires are in H and recalls are reported in R. Separations are reported in the variable S.

Because of the confidentiality protection system used for the Employment Dynamics Estimates, the estimate of beginning-of-quarter employment for both sexes (SEX=0) and all age groups (AGEGROUP=0) is exactly equal to the BLS-published Covered Employment and Wages estimate of employment on the 12th day of the first month of the quarter for the relevant geographic and industrial category. For example, in California the EDE estimate for beginning-of-quarter employment in the entire state in 1999:3 is 14,440,000 (B=14,440,000 for STATE="06", YEAR=1999, QUARTER=3, COUNTY="000" (or SIC_DIVISION=(blank)),SEX=0, AGEGROUP=0), which exactly equals the BLS CEW estimate for month 1 in 1999:3 for the entire state, combining all establishment sizes and all ownership categories. Similarly, the EDE estimate of end-of-quarter employment is controlled for the category both sexes (SEX=0) and all age groups (AGEGROUP=0) to equal the BLS-published CEW estimate of employment on the 12th day of the first month of the succeeding quarter. Again, considering California, the EDE estimate for end-of-quarter employment in 1999:3 is 14,660,000, which exactly equals the BLS CEW estimate for month 1 in 1999:4 for the entire state (E=14,660,000 for STATE="06", YEAR=1999, QUARTER=3, COUNTY="000" (or SIC_DIVISION=(blank)), SEX=0, AGEGROUP=0). See the tables in Appenix M for a complete list of the BLS series used in this control.

Quarterly employment estimates are also provided on a full-quarter basis. These estimates are reported in the variable F. Full-quarter accessions are reported in FA. Full-quarter separations are reported in FS. Full-quarter new hires are in H3. The raking step of the EDE confidentiality protection system used to disclosure proof the variables B and E (and related variables) does not affect the estimates of full-quarter employment and related flows.

Job creations and destructions are reported in the variables JC and JD, respectively. Net job flows are reported in the variable JF. Full-quarter job creations and destructions are reported in FJC and FJD, respectively. Full-quarter net job flows are in FJF.

Average earnings of full-quarter employees can be found in Z_W3. Average earnings of full-quarter new hires are reported in Z_WH3.

See the table of contents at the end of this primer for a list of other variables and definitions in the EDE data files.

1.5.3 Status Flag Variables

Every variable in EDE data files has an associated status flag. These variables are called [varname]_status. The status flag variables are also shown in the contents tables at the end of this primer. The status flag has three distinct values:

- $*$ indicates significant distortion is necessary to preserve confidentiality
- d indicates an estimate is based on < 3 employees
- n indicates an estimate is not defined because no employees are in the relevant category

1.6 Data availability tables

1.6.1 California

The CONTENTS Procedure

Data Set Name:	STATE.CA_COUNTY_V23_FUZZED	**Observations:**	53703
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:25 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:25 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

California

The FREQ Procedure

FIPS State				
state	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
06 CALIFORNIA	53703	100.00	53703	100.00

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
000 CALIFORNIA	918	1.71	918	1.71
001 ALAMEDA	918	1.71	1836	3.42
003 ALPINE	648	1.21	2484	4.63
005 AMADOR	918	1.71	3402	6.33
007 BUTTE	918	1.71	4320	8.04
009 CALAVERAS	918	1.71	5238	9.75
011 COLUSA	918	1.71	6156	11.46
013 CONTRA COSTA	918	1.71	7074	13.17
015 DEL NORTE	918	1.71	7992	14.88
017 EL DORADO	918	1.71	8910	16.59
019 FRESNO	918	1.71	9828	18.30
021 GLENN	918	1.71	10746	20.01
023 HUMBOLDT	918	1.71	11664	21.72
025 IMPERIAL	918	1.71	12582	23.43
027 INYO	918	1.71	13500	25.14
029 KERN	918	1.71	14418	26.85
031 KINGS	918	1.71	15336	28.56
033 LAKE	918	1.71	16254	30.27
035 LASSEN	918	1.71	17172	31.98
037 LOS ANGELES	918	1.71	18090	33.69
039 MADERA	918	1.71	19008	35.39
041 MARIN	918	1.71	19926	37.10
043 MARIPOSA	918	1.71	20844	38.81
045 MENDOCINO	918	1.71	21762	40.52
047 MERCED	918	1.71	22680	42.23
049 MODOC	918	1.71	23598	43.94
051 MONO	918	1.71	24516	45.65
053 MONTEREY	918	1.71	25434	47.36
055 NAPA	918	1.71	26352	49.07

(cont.)

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
057 NEVADA	918	1.71	27270	50.78
059 ORANGE	918	1.71	28188	52.49
061 PLACER	918	1.71	29106	54.20
063 PLUMAS	918	1.71	30024	55.91
065 RIVERSIDE	918	1.71	30942	57.62
067 SACRAMENTO	918	1.71	31860	59.33
069 SAN BENITO	918	1.71	32778	61.04
071 SAN BERNARDINO	918	1.71	33696	62.75
073 SAN DIEGO	918	1.71	34614	64.45
075 SAN FRANCISCO	918	1.71	35532	66.16
077 SAN JOAQUIN	918	1.71	36450	67.87
079 SAN LUIS OBISPO	918	1.71	37368	69.58
081 SAN MATEO	918	1.71	38286	71.29
083 SANTA BARBARA	918	1.71	39204	73.00
085 SANTA CLARA	918	1.71	40122	74.71
087 SANTA CRUZ	918	1.71	41040	76.42
089 SHASTA	918	1.71	41958	78.13
091 SIERRA	729	1.36	42687	79.49
093 SISKIYOU	918	1.71	43605	81.20
095 SOLANO	918	1.71	44523	82.91
097 SONOMA	918	1.71	45441	84.62
099 STANISLAUS	918	1.71	46359	86.32
101 SUTTER	918	1.71	47277	88.03
103 TEHAMA	918	1.71	48195	89.74
105 TRINITY	918	1.71	49113	91.45
107 TULARE	918	1.71	50031	93.16
109 TUOLUMNE	918	1.71	50949	94.87
111 VENTURA	918	1.71	51867	96.58
113 YOLO	918	1.71	52785	98.29
115 YUBA	918	1.71	53703	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	17901	33.33	17901	33.33
1 : Men	17901	33.33	35802	66.67
2 : Women	17901	33.33	53703	100.00

Age group				
agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	5967	11.11	5967	11.11
1 : 14-18	5967	11.11	11934	22.22
2 : 19-21	5967	11.11	17901	33.33
3 : 22-24	5967	11.11	23868	44.44
4 : 25-34	5967	11.11	29835	55.56
5 : 35-44	5967	11.11	35802	66.67
6 : 45-54	5967	11.11	41769	77.78
7 : 55-64	5967	11.11	47736	88.89
8 : 65+	5967	11.11	53703	100.00

Table of year by quarter					
year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1991	0	0	1593	1593	3186
1992	1593	1593	1593	1593	6372
1993	1593	1593	1593	1566	6345
1994	1539	1566	1539	1566	6210
1995	1539	1566	1566	1539	6210
1996	1539	1566	1566	1593	6264
1997	1593	1593	1593	1593	6372
1998	1593	1593	1593	1593	6372
1999	1593	1593	1593	1593	6372
Total	12582	12663	14229	14229	53703

The CONTENTS Procedure

Data Set Name:	STATE.CA_SIC_DIVISION_V23_FUZZED	**Observations:**	11016
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:25 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:25 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

California

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
06 CALIFORNIA	11016	100.00	11016	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	918	9.09	918	9.09
B Mining	918	9.09	1836	18.18
C Construction	918	9.09	2754	27.27
D Manufacturing	918	9.09	3672	36.36
E Trans. & Utilities	918	9.09	4590	45.45
F Wholesale trade	918	9.09	5508	54.55
G Retail Trade	918	9.09	6426	63.64
H FIRE	918	9.09	7344	72.73
I Services	918	9.09	8262	81.82
J Public Admin.	918	9.09	9180	90.91
Other	918	9.09	10098	100.00

Frequency Missing = 918

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	3672	33.33	3672	33.33
1 : Men	3672	33.33	7344	66.67
2 : Women	3672	33.33	11016	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	1224	11.11	1224	11.11
1 : 14-18	1224	11.11	2448	22.22
2 : 19-21	1224	11.11	3672	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	1224	11.11	4896	44.44
4 : 25-34	1224	11.11	6120	55.56
5 : 35-44	1224	11.11	7344	66.67
6 : 45-54	1224	11.11	8568	77.78
7 : 55-64	1224	11.11	9792	88.89
8 : 65+	1224	11.11	11016	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1991	0	0	324	324	648
1992	324	324	324	324	1296
1993	324	324	324	324	1296
1994	324	324	324	324	1296
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	324	1296
Total	2592	2592	2916	2916	11016

1.6.2 Florida

The CONTENTS Procedure

Data Set Name:	STATE.FL_COUNTY_V23_FUZZED	**Observations:**	47466
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:25 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:25 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

Florida

The FREQ Procedure

FIPS State				
state	Frequency	Percent	CumulativeFrequency	CumulativePercent
12 FLORIDA	47466	100.00	47466	100.00

FIPS county				
county	Frequency	Percent	CumulativeFrequency	CumulativePercent
000 FLORIDA	702	1.48	702	1.48
001 ALACHUA	702	1.48	1404	2.96
003 BAKER	702	1.48	2106	4.44
005 BAY	702	1.48	2808	5.92
007 BRADFORD	702	1.48	3510	7.39
009 BREVARD	702	1.48	4212	8.87
011 BROWARD	702	1.48	4914	10.35
013 CALHOUN	702	1.48	5616	11.83
015 CHARLOTTE	702	1.48	6318	13.31
017 CITRUS	702	1.48	7020	14.79
019 CLAY	702	1.48	7722	16.27
021 COLLIER	567	1.19	8289	17.46
023 COLUMBIA	702	1.48	8991	18.94
025 (MIAMI-)DADE	702	1.48	9693	20.42
027 DESOTO	702	1.48	10395	21.90
029 DIXIE	702	1.48	11097	23.38
031 DUVAL	702	1.48	11799	24.86
033 ESCAMBIA	702	1.48	12501	26.34
035 FLAGLER	702	1.48	13203	27.82
037 FRANKLIN	702	1.48	13905	29.29
039 GADSDEN	702	1.48	14607	30.77
041 GILCHRIST	702	1.48	15309	32.25
043 GLADES	702	1.48	16011	33.73
045 GULF	702	1.48	16713	35.21
047 HAMILTON	702	1.48	17415	36.69
049 HARDEE	702	1.48	18117	38.17
051 HENDRY	702	1.48	18819	39.65
053 HERNANDO	702	1.48	19521	41.13
055 HIGHLANDS	702	1.48	20223	42.61

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
057 HILLSBOROUGH	702	1.48	20925	44.08
059 HOLMES	702	1.48	21627	45.56
061 INDIAN RIVER	702	1.48	22329	47.04
063 JACKSON	702	1.48	23031	48.52
065 JEFFERSON	702	1.48	23733	50.00
067 LAFAYETTE	702	1.48	24435	51.48
069 LAKE	702	1.48	25137	52.96
071 LEE	702	1.48	25839	54.44
073 LEON	702	1.48	26541	55.92
075 LEVY	702	1.48	27243	57.39
077 LIBERTY	702	1.48	27945	58.87
079 MADISON	702	1.48	28647	60.35
081 MANATEE	702	1.48	29349	61.83
083 MARION	702	1.48	30051	63.31
085 MARTIN	702	1.48	30753	64.79
087 MONROE	702	1.48	31455	66.27
089 NASSAU	702	1.48	32157	67.75
091 OKALOOSA	702	1.48	32859	69.23
093 OKEECHOBEE	702	1.48	33561	70.71
095 ORANGE	702	1.48	34263	72.18
097 OSCEOLA	702	1.48	34965	73.66
099 PALM BEACH	702	1.48	35667	75.14
101 PASCO	702	1.48	36369	76.62
103 PINELLAS	702	1.48	37071	78.10
105 POLK	702	1.48	37773	79.58
107 PUTNAM	702	1.48	38475	81.06
109 ST. JOHNS	702	1.48	39177	82.54
111 ST. LUCIE	702	1.48	39879	84.02
113 SANTA ROSA	702	1.48	40581	85.49
115 SARASOTA	702	1.48	41283	86.97
117 SEMINOLE	567	1.19	41850	88.17
119 SUMTER	702	1.48	42552	89.65
121 SUWANNEE	702	1.48	43254	91.13
123 TAYLOR	702	1.48	43956	92.61
125 UNION	702	1.48	44658	94.08
127 VOLUSIA	702	1.48	45360	95.56
129 WAKULLA	702	1.48	46062	97.04
131 WALTON	702	1.48	46764	98.52

(cont.)

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
133 WASHINGTON	702	1.48	47466	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	15822	33.33	15822	33.33
1 : Men	15822	33.33	31644	66.67
2 : Women	15822	33.33	47466	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	5274	11.11	5274	11.11
1 : 14-18	5274	11.11	10548	22.22
2 : 19-21	5274	11.11	15822	33.33
3 : 22-24	5274	11.11	21096	44.44
4 : 25-34	5274	11.11	26370	55.56
5 : 35-44	5274	11.11	31644	66.67
6 : 45-54	5274	11.11	36918	77.78
7 : 55-64	5274	11.11	42192	88.89
8 : 65+	5274	11.11	47466	100.00

Table of year by quarter

year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1992	0	0	0	1836	1836
1993	1836	1836	1836	1836	7344
1994	1836	1836	1836	1836	7344
1995	1836	1836	1836	1836	7344
1996	1836	1836	1836	1782	7290
1997	1782	1782	1782	1782	7128
1998	1836	1836	1836	1836	7344
1999	1836	0	0	0	1836
Total	12798	10962	10962	12744	47466

The CONTENTS Procedure

Data Set Name:	STATE.FL_SIC_DIVISION_V23_FUZZED	**Observations:**	8424
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:26 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:26 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

Florida

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
12 FLORIDA	8424	100.00	8424	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	702	9.09	702	9.09
B Mining	702	9.09	1404	18.18
C Construction	702	9.09	2106	27.27
D Manufacturing	702	9.09	2808	36.36
E Trans. & Utilities	702	9.09	3510	45.45
F Wholesale trade	702	9.09	4212	54.55
G Retail Trade	702	9.09	4914	63.64
H FIRE	702	9.09	5616	72.73
I Services	702	9.09	6318	81.82
J Public Admin.	702	9.09	7020	90.91
Other	702	9.09	7722	100.00

Frequency Missing = 702

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	2808	33.33	2808	33.33
1 : Men	2808	33.33	5616	66.67
2 : Women	2808	33.33	8424	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	936	11.11	936	11.11
1 : 14-18	936	11.11	1872	22.22
2 : 19-21	936	11.11	2808	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	936	11.11	3744	44.44
4 : 25-34	936	11.11	4680	55.56
5 : 35-44	936	11.11	5616	66.67
6 : 45-54	936	11.11	6552	77.78
7 : 55-64	936	11.11	7488	88.89
8 : 65+	936	11.11	8424	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1992	0	0	0	324	324
1993	324	324	324	324	1296
1994	324	324	324	324	1296
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	0	0	0	324
Total	2268	1944	1944	2268	8424

1.6.3 Illinois

The CONTENTS Procedure

Data Set Name:	STATE.IL_COUNTY_V23_FUZZED	**Observations:**	116802
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:27 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:27 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

Illinois

The FREQ Procedure

FIPS State				
state	Frequency	Percent	CumulativeFrequency	CumulativePercent
17 ILLINOIS	116802	100.00	116802	100.00

FIPS county				
county	Frequency	Percent	CumulativeFrequency	CumulativePercent
000 ILLINOIS	1134	0.97	1134	0.97
001 ADAMS	1134	0.97	2268	1.94
003 ALEXANDER	1134	0.97	3402	2.91
005 BOND	1134	0.97	4536	3.88
007 BOONE	1134	0.97	5670	4.85
009 BROWN	1134	0.97	6804	5.83
011 BUREAU	1134	0.97	7938	6.80
013 CALHOUN	1134	0.97	9072	7.77
015 CARROLL	1134	0.97	10206	8.74
017 CASS	1134	0.97	11340	9.71
019 CHAMPAIGN	1134	0.97	12474	10.68
021 CHRISTIAN	1134	0.97	13608	11.65
023 CLARK	1134	0.97	14742	12.62
025 CLAY	1134	0.97	15876	13.59
027 CLINTON	1134	0.97	17010	14.56
029 COLES	1134	0.97	18144	15.53
031 COOK	1134	0.97	19278	16.50
033 CRAWFORD	1134	0.97	20412	17.48
035 CUMBERLAND	1134	0.97	21546	18.45
037 DEKALB	1134	0.97	22680	19.42
039 DE WITT	1134	0.97	23814	20.39
041 DOUGLAS	1134	0.97	24948	21.36
043 DUPAGE	1134	0.97	26082	22.33
045 EDGAR	1134	0.97	27216	23.30
047 EDWARDS	1134	0.97	28350	24.27
049 EFFINGHAM	1134	0.97	29484	25.24
051 FAYETTE	1134	0.97	30618	26.21
053 FORD	1134	0.97	31752	27.18
055 FRANKLIN	1134	0.97	32886	28.16

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
057 FULTON	1134	0.97	34020	29.13
059 GALLATIN	1134	0.97	35154	30.10
061 GREENE	1134	0.97	36288	31.07
063 GRUNDY	1134	0.97	37422	32.04
065 HAMILTON	1134	0.97	38556	33.01
067 HANCOCK	1134	0.97	39690	33.98
069 HARDIN	1134	0.97	40824	34.95
071 HENDERSON	1134	0.97	41958	35.92
073 HENRY	1134	0.97	43092	36.89
075 IROQUOIS	1134	0.97	44226	37.86
077 JACKSON	1134	0.97	45360	38.83
079 JASPER	1134	0.97	46494	39.81
081 JEFFERSON	1134	0.97	47628	40.78
083 JERSEY	1134	0.97	48762	41.75
085 JO DAVIESS	1134	0.97	49896	42.72
087 JOHNSON	1134	0.97	51030	43.69
089 KANE	1134	0.97	52164	44.66
091 KANKAKEE	1134	0.97	53298	45.63
093 KENDALL	1134	0.97	54432	46.60
095 KNOX	1134	0.97	55566	47.57
097 LAKE	1134	0.97	56700	48.54
099 LA SALLE	1134	0.97	57834	49.51
101 LAWRENCE	1134	0.97	58968	50.49
103 LEE	1134	0.97	60102	51.46
105 LIVINGSTON	1134	0.97	61236	52.43
107 LOGAN	1134	0.97	62370	53.40
109 MCDONOUGH	1134	0.97	63504	54.37
111 MCHENRY	1134	0.97	64638	55.34
113 MCLEAN	1134	0.97	65772	56.31
115 MACON	1134	0.97	66906	57.28
117 MACOUPIN	1134	0.97	68040	58.25
119 MADISON	1134	0.97	69174	59.22
121 MARION	1134	0.97	70308	60.19
123 MARSHALL	1134	0.97	71442	61.17
125 MASON	1134	0.97	72576	62.14
127 MASSAC	1134	0.97	73710	63.11
129 MENARD	1134	0.97	74844	64.08
131 MERCER	1134	0.97	75978	65.05

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
133 MONROE	1134	0.97	77112	66.02
135 MONTGOMERY	1134	0.97	78246	66.99
137 MORGAN	1134	0.97	79380	67.96
139 MOULTRIE	1134	0.97	80514	68.93
141 OGLE	1134	0.97	81648	69.90
143 PEORIA	1134	0.97	82782	70.87
145 PERRY	1134	0.97	83916	71.84
147 PIATT	1134	0.97	85050	72.82
149 PIKE	1134	0.97	86184	73.79
151 POPE	1134	0.97	87318	74.76
153 PULASKI	1134	0.97	88452	75.73
155 PUTNAM	1134	0.97	89586	76.70
157 RANDOLPH	1134	0.97	90720	77.67
159 RICHLAND	1134	0.97	91854	78.64
161 ROCK ISLAND	1134	0.97	92988	79.61
163 ST.CLAIR	1134	0.97	94122	80.58
165 SALINE	1134	0.97	95256	81.55
167 SANGAMON	1134	0.97	96390	82.52
169 SCHUYLER	1134	0.97	97524	83.50
171 SCOTT	1134	0.97	98658	84.47
173 SHELBY	1134	0.97	99792	85.44
175 STARK	1134	0.97	100926	86.41
177 STEPHENSON	1134	0.97	102060	87.38
179 TAZEWELL	1134	0.97	103194	88.35
181 UNION	1134	0.97	104328	89.32
183 VERMILION	1134	0.97	105462	90.29
185 WABASH	1134	0.97	106596	91.26
187 WARREN	1134	0.97	107730	92.23
189 WASHINGTON	1134	0.97	108864	93.20
191 WAYNE	1134	0.97	109998	94.17
193 WHITE	1134	0.97	111132	95.15
195 WHITESIDE	1134	0.97	112266	96.12
197 WILL	1134	0.97	113400	97.09
199 WILLIAMSON	1134	0.97	114534	98.06
201 WINNEBAGO	1134	0.97	115668	99.03
203 WOODFORD	1134	0.97	116802	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	38934	33.33	38934	33.33
1 : Men	38934	33.33	77868	66.67
2 : Women	38934	33.33	116802	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	12978	11.11	12978	11.11
1 : 14-18	12978	11.11	25956	22.22
2 : 19-21	12978	11.11	38934	33.33
3 : 22-24	12978	11.11	51912	44.44
4 : 25-34	12978	11.11	64890	55.56
5 : 35-44	12978	11.11	77868	66.67
6 : 45-54	12978	11.11	90846	77.78
7 : 55-64	12978	11.11	103824	88.89
8 : 65+	12978	11.11	116802	100.00

Table of year by quarter

year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1990	2781	2781	2781	2781	11124
1991	2781	2781	2781	2781	11124
1992	2781	2781	2781	2781	11124
1993	2781	2781	2781	2781	11124
1994	2781	2781	2781	2781	11124
1995	2781	2781	2781	2781	11124
1996	2781	2781	2781	2781	11124
1997	2781	2781	2781	2781	11124
1998	2781	2781	2781	2781	11124
1999	2781	2781	2781	2781	11124
2000	2781	2781	0	0	5562
Total	30591	30591	27810	27810	116802

The CONTENTS Procedure

Data Set Name:	STATE.IL_SIC_DIVISION_V23_FUZZED	**Observations:**	13608
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:28 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:28 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

Illinois

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
17 ILLINOIS	13608	100.00	13608	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	1134	9.09	1134	9.09
B Mining	1134	9.09	2268	18.18
C Construction	1134	9.09	3402	27.27
D Manufacturing	1134	9.09	4536	36.36
E Trans. & Utilities	1134	9.09	5670	45.45
F Wholesale trade	1134	9.09	6804	54.55
G Retail Trade	1134	9.09	7938	63.64
H FIRE	1134	9.09	9072	72.73
I Services	1134	9.09	10206	81.82
J Public Admin.	1134	9.09	11340	90.91
Other	1134	9.09	12474	100.00

Frequency Missing = 1134

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	4536	33.33	4536	33.33
1 : Men	4536	33.33	9072	66.67
2 : Women	4536	33.33	13608	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	1512	11.11	1512	11.11
1 : 14-18	1512	11.11	3024	22.22
2 : 19-21	1512	11.11	4536	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	1512	11.11	6048	44.44
4 : 25-34	1512	11.11	7560	55.56
5 : 35-44	1512	11.11	9072	66.67
6 : 45-54	1512	11.11	10584	77.78
7 : 55-64	1512	11.11	12096	88.89
8 : 65+	1512	11.11	13608	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1990	324	324	324	324	1296
1991	324	324	324	324	1296
1992	324	324	324	324	1296
1993	324	324	324	324	1296
1994	324	324	324	324	1296
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	324	1296
2000	324	324	0	0	648
Total	3564	3564	3240	3240	13608

1.6.4 Maryland

The CONTENTS Procedure

Data Set Name:	STATE.MD_COUNTY_V23_FUZZED	**Observations:**	26271
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:40 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:40 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

Maryland

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
24 MARYLAND	26271	100.00	26271	100.00

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
000 MARYLAND	1053	4.01	1053	4.01
001 ALLEGANY	1053	4.01	2106	8.02
003 ANNE ARUNDEL	1053	4.01	3159	12.02
005 BALTIMORE	1053	4.01	4212	16.03
009 CALVERT	1053	4.01	5265	20.04
011 CAROLINE	1053	4.01	6318	24.05
013 CARROLL	1053	4.01	7371	28.06
015 CECIL	1053	4.01	8424	32.07
017 CHARLES	1053	4.01	9477	36.07
019 DORCHESTER	1053	4.01	10530	40.08
021 FREDERICK	1053	4.01	11583	44.09
023 GARRETT	1053	4.01	12636	48.10
025 HARFORD	1053	4.01	13689	52.11
027 HOWARD	1053	4.01	14742	56.12
029 KENT	1053	4.01	15795	60.12
031 MONTGOMERY	1053	4.01	16848	64.13
033 PRINCE GEORGE'S	1053	4.01	17901	68.14
035 QUEEN ANNE'S	1053	4.01	18954	72.15
037 SOMERSET	1053	4.01	20007	76.16
039 ST. MARY'S	999	3.80	21006	79.96
041 TALBOT	1053	4.01	22059	83.97
043 WASHINGTON	1053	4.01	23112	87.98
045 WICOMICO	1053	4.01	24165	91.98
047 WORCESTER	1053	4.01	25218	95.99
510 BALTIMORE CITY	1053	4.01	26271	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	8757	33.33	8757	33.33
1 : Men	8757	33.33	17514	66.67
2 : Women	8757	33.33	26271	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	2919	11.11	2919	11.11
1 : 14-18	2919	11.11	5838	22.22
2 : 19-21	2919	11.11	8757	33.33
3 : 22-24	2919	11.11	11676	44.44
4 : 25-34	2919	11.11	14595	55.56
5 : 35-44	2919	11.11	17514	66.67
6 : 45-54	2919	11.11	20433	77.78
7 : 55-64	2919	11.11	23352	88.89
8 : 65+	2919	11.11	26271	100.00

Table of year by quarter

year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1990	675	675	675	675	2700
1991	675	675	675	648	2673
1992	648	675	675	675	2673
1993	675	675	675	675	2700
1994	675	675	675	675	2700
1995	675	675	675	675	2700
1996	675	675	675	675	2700
1997	675	675	675	675	2700
1998	675	675	675	675	2700
1999	675	675	675	0	2025
Total	6723	6750	6750	6048	26271

The CONTENTS Procedure

Data Set Name:	STATE.MD_SIC_DIVISION_V23_FUZZED	**Observations:**	12636
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:41 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:41 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

Maryland

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
24 MARYLAND	12636	100.00	12636	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	1053	9.09	1053	9.09
B Mining	1053	9.09	2106	18.18
C Construction	1053	9.09	3159	27.27
D Manufacturing	1053	9.09	4212	36.36
E Trans. & Utilities	1053	9.09	5265	45.45
F Wholesale trade	1053	9.09	6318	54.55
G Retail Trade	1053	9.09	7371	63.64
H FIRE	1053	9.09	8424	72.73
I Services	1053	9.09	9477	81.82
J Public Admin.	1053	9.09	10530	90.91
Other	1053	9.09	11583	100.00

Frequency Missing = 1053

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	4212	33.33	4212	33.33
1 : Men	4212	33.33	8424	66.67
2 : Women	4212	33.33	12636	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	1404	11.11	1404	11.11
1 : 14-18	1404	11.11	2808	22.22
2 : 19-21	1404	11.11	4212	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	1404	11.11	5616	44.44
4 : 25-34	1404	11.11	7020	55.56
5 : 35-44	1404	11.11	8424	66.67
6 : 45-54	1404	11.11	9828	77.78
7 : 55-64	1404	11.11	11232	88.89
8 : 65+	1404	11.11	12636	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1990	324	324	324	324	1296
1991	324	324	324	324	1296
1992	324	324	324	324	1296
1993	324	324	324	324	1296
1994	324	324	324	324	1296
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	0	972
Total	3240	3240	3240	2916	12636

1.6.5 Minnesota

The CONTENTS Procedure

Data Set Name:	STATE.MN_COUNTY_V23_FUZZED	**Observations:**	61452
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:42 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:42 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

Minnesota

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
27 MINNESOTA	61452	100.00	61452	100.00

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
000 MINNESOTA	702	1.14	702	1.14
001 AITKIN	702	1.14	1404	2.28
003 ANOKA	702	1.14	2106	3.43
005 BECKER	702	1.14	2808	4.57
007 BELTRAMI	702	1.14	3510	5.71
009 BENTON	702	1.14	4212	6.85
011 BIG STONE	702	1.14	4914	8.00
013 BLUE EARTH	702	1.14	5616	9.14
015 BROWN	702	1.14	6318	10.28
017 CARLTON	702	1.14	7020	11.42
019 CARVER	702	1.14	7722	12.57
021 CASS	702	1.14	8424	13.71
023 CHIPPEWA	702	1.14	9126	14.85
025 CHISAGO	702	1.14	9828	15.99
027 CLAY	702	1.14	10530	17.14
029 CLEARWATER	702	1.14	11232	18.28
031 COOK	702	1.14	11934	19.42
033 COTTONWOOD	702	1.14	12636	20.56
035 CROW WING	702	1.14	13338	21.70
037 DAKOTA	702	1.14	14040	22.85
039 DODGE	702	1.14	14742	23.99
041 DOUGLAS	702	1.14	15444	25.13
043 FARIBAULT	702	1.14	16146	26.27
045 FILLMORE	702	1.14	16848	27.42
047 FREEBORN	702	1.14	17550	28.56
049 GOODHUE	702	1.14	18252	29.70
051 GRANT	702	1.14	18954	30.84
053 HENNEPIN	702	1.14	19656	31.99
055 HOUSTON	702	1.14	20358	33.13

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
057 HUBBARD	702	1.14	21060	34.27
059 ISANTI	702	1.14	21762	35.41
061 ITASCA	702	1.14	22464	36.56
063 JACKSON	702	1.14	23166	37.70
065 KANABEC	702	1.14	23868	38.84
067 KANDIYOHI	702	1.14	24570	39.98
069 KITTSON	702	1.14	25272	41.12
071 KOOCHICHING	702	1.14	25974	42.27
073 LAC QUI PARLE	702	1.14	26676	43.41
075 LAKE	702	1.14	27378	44.55
077 LAKE OF THE WOODS	702	1.14	28080	45.69
079 LE SUEUR	702	1.14	28782	46.84
081 LINCOLN	702	1.14	29484	47.98
083 LYON	702	1.14	30186	49.12
085 MCLEOD	702	1.14	30888	50.26
087 MAHNOMEN	702	1.14	31590	51.41
089 MARSHALL	702	1.14	32292	52.55
091 MARTIN	702	1.14	32994	53.69
093 MEEKER	702	1.14	33696	54.83
095 MILLE LACS	702	1.14	34398	55.98
097 MORRISON	702	1.14	35100	57.12
099 MOWER	702	1.14	35802	58.26
101 MURRAY	702	1.14	36504	59.40
103 NICOLLET	702	1.14	37206	60.54
105 NOBLES	702	1.14	37908	61.69
107 NORMAN	702	1.14	38610	62.83
109 OLMSTED	702	1.14	39312	63.97
111 OTTER TAIL	702	1.14	40014	65.11
113 PENNINGTON	702	1.14	40716	66.26
115 PINE	702	1.14	41418	67.40
117 PIPESTONE	702	1.14	42120	68.54
119 POLK	702	1.14	42822	69.68
121 POPE	702	1.14	43524	70.83
123 RAMSEY	702	1.14	44226	71.97
125 RED LAKE	540	0.88	44766	72.85
127 REDWOOD	702	1.14	45468	73.99
129 RENVILLE	702	1.14	46170	75.13
131 RICE	702	1.14	46872	76.27

(cont.)

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
133 ROCK	702	1.14	47574	77.42
135 ROSEAU	702	1.14	48276	78.56
137 ST. LOUIS	702	1.14	48978	79.70
139 SCOTT	702	1.14	49680	80.84
141 SHERBURNE	702	1.14	50382	81.99
143 SIBLEY	702	1.14	51084	83.13
145 STEARNS	702	1.14	51786	84.27
147 STEELE	702	1.14	52488	85.41
149 STEVENS	702	1.14	53190	86.56
151 SWIFT	702	1.14	53892	87.70
153 TODD	702	1.14	54594	88.84
155 TRAVERSE	540	0.88	55134	89.72
157 WABASHA	702	1.14	55836	90.86
159 WADENA	702	1.14	56538	92.00
161 WASECA	702	1.14	57240	93.15
163 WASHINGTON	702	1.14	57942	94.29
165 WATONWAN	702	1.14	58644	95.43
167 WILKIN	702	1.14	59346	96.57
169 WINONA	702	1.14	60048	97.72
171 WRIGHT	702	1.14	60750	98.86
173 YELLOW MEDICINE	702	1.14	61452	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	20484	33.33	20484	33.33
1 : Men	20484	33.33	40968	66.67
2 : Women	20484	33.33	61452	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	6828	11.11	6828	11.11
1 : 14-18	6828	11.11	13656	22.22
2 : 19-21	6828	11.11	20484	33.33
3 : 22-24	6828	11.11	27312	44.44

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
4 : 25-34	6828	11.11	34140	55.56
5 : 35-44	6828	11.11	40968	66.67
6 : 45-54	6828	11.11	47796	77.78
7 : 55-64	6828	11.11	54624	88.89
8 : 65+	6828	11.11	61452	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1994	0	0	2376	2376	4752
1995	2376	2376	2376	2376	9504
1996	2376	2376	2376	2376	9504
1997	2376	2376	2376	2376	9504
1998	2349	2349	2349	2376	9423
1999	2376	2349	2322	2322	9369
2000	2349	2349	2349	2349	9396
Total	14202	14175	16524	16551	61452

The CONTENTS Procedure

Data Set Name:	STATE.MN_SIC_DIVISION_V23_FUZZED	**Observations:**	8424
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:42 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:42 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

Minnesota

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
27 MINNESOTA	8424	100.00	8424	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	702	9.09	702	9.09
B Mining	702	9.09	1404	18.18
C Construction	702	9.09	2106	27.27
D Manufacturing	702	9.09	2808	36.36
E Trans. & Utilities	702	9.09	3510	45.45
F Wholesale trade	702	9.09	4212	54.55
G Retail Trade	702	9.09	4914	63.64
H FIRE	702	9.09	5616	72.73
I Services	702	9.09	6318	81.82
J Public Admin.	702	9.09	7020	90.91
Other	702	9.09	7722	100.00

Frequency Missing = 702

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	2808	33.33	2808	33.33
1 : Men	2808	33.33	5616	66.67
2 : Women	2808	33.33	8424	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	936	11.11	936	11.11
1 : 14-18	936	11.11	1872	22.22
2 : 19-21	936	11.11	2808	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	936	11.11	3744	44.44
4 : 25-34	936	11.11	4680	55.56
5 : 35-44	936	11.11	5616	66.67
6 : 45-54	936	11.11	6552	77.78
7 : 55-64	936	11.11	7488	88.89
8 : 65+	936	11.11	8424	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1994	0	0	324	324	648
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	324	1296
2000	324	324	324	324	1296
Total	1944	1944	2268	2268	8424

1.6.6 North Carolina

The CONTENTS Procedure

Data Set Name:	STATE.NC_COUNTY_V23_FUZZED	**Observations:**	107541
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:42 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:42 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

North Carolina

The FREQ Procedure

FIPS State				
state	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
37 NORTH CAROLINA	107541	100.00	107541	100.00

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
000 NORTH CAROLINA	1080	1.00	1080	1.00
001 ALAMANCE	1080	1.00	2160	2.01
003 ALEXANDER	1080	1.00	3240	3.01
005 ALLEGHANY	1080	1.00	4320	4.02
007 ANSON	1080	1.00	5400	5.02
009 ASHE	1080	1.00	6480	6.03
011 AVERY	1080	1.00	7560	7.03
013 BEAUFORT	1080	1.00	8640	8.03
015 BERTIE	1080	1.00	9720	9.04
017 BLADEN	1080	1.00	10800	10.04
019 BRUNSWICK	1080	1.00	11880	11.05
021 BUNCOMBE	1080	1.00	12960	12.05
023 BURKE	1080	1.00	14040	13.06
025 CABARRUS	1080	1.00	15120	14.06
027 CALDWELL	1080	1.00	16200	15.06
031 CARTERET	1080	1.00	17280	16.07
033 CASWELL	1080	1.00	18360	17.07
035 CATAWBA	1080	1.00	19440	18.08
037 CHATHAM	1080	1.00	20520	19.08
039 CHEROKEE	1080	1.00	21600	20.09
041 CHOWAN	1080	1.00	22680	21.09
043 CLAY	1080	1.00	23760	22.09
045 CLEVELAND	1080	1.00	24840	23.10
047 COLUMBUS	1080	1.00	25920	24.10
049 CRAVEN	1080	1.00	27000	25.11
051 CUMBERLAND	1080	1.00	28080	26.11
053 CURRITUCK	1080	1.00	29160	27.12
055 DARE	1080	1.00	30240	28.12
057 DAVIDSON	1080	1.00	31320	29.12

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
059 DAVIE	1080	1.00	32400	30.13
061 DUPLIN	1080	1.00	33480	31.13
063 DURHAM	1080	1.00	34560	32.14
065 EDGECOMBE	1080	1.00	35640	33.14
067 FORSYTH	1080	1.00	36720	34.15
069 FRANKLIN	1080	1.00	37800	35.15
071 GASTON	1080	1.00	38880	36.15
073 GATES	1080	1.00	39960	37.16
075 GRAHAM	1080	1.00	41040	38.16
077 GRANVILLE	1080	1.00	42120	39.17
079 GREENE	1080	1.00	43200	40.17
081 GUILFORD	1080	1.00	44280	41.17
083 HALIFAX	1080	1.00	45360	42.18
085 HARNETT	1080	1.00	46440	43.18
087 HAYWOOD	1080	1.00	47520	44.19
089 HENDERSON	1080	1.00	48600	45.19
091 HERTFORD	1080	1.00	49680	46.20
093 HOKE	1080	1.00	50760	47.20
095 HYDE	1080	1.00	51840	48.20
097 IREDELL	1080	1.00	52920	49.21
099 JACKSON	1080	1.00	54000	50.21
101 JOHNSTON	1080	1.00	55080	51.22
103 JONES	1080	1.00	56160	52.22
105 LEE	1080	1.00	57240	53.23
107 LENOIR	1080	1.00	58320	54.23
109 LINCOLN	1080	1.00	59400	55.23
111 MCDOWELL	1080	1.00	60480	56.24
113 MACON	1080	1.00	61560	57.24
115 MADISON	1080	1.00	62640	58.25
117 MARTIN	1080	1.00	63720	59.25
119 MECKLENBURG	1080	1.00	64800	60.26
121 MITCHELL	1080	1.00	65880	61.26
123 MONTGOMERY	1080	1.00	66960	62.26
125 MOORE	1080	1.00	68040	63.27
127 NASH	1080	1.00	69120	64.27
129 NEW_HANOVER	1080	1.00	70200	65.28
131 NORTHAMPTON	1080	1.00	71280	66.28
133 ONSLOW	1080	1.00	72360	67.29

(cont.)

FIPS county

county	Frequency	Percent	CumulativeFrequency	CumulativePercent
135 ORANGE	1080	1.00	73440	68.29
137 PAMLICO	1080	1.00	74520	69.29
139 PASQUOTANK	1080	1.00	75600	70.30
141 PENDER	1080	1.00	76680	71.30
143 PERQUIMANS	1080	1.00	77760	72.31
145 PERSON	1080	1.00	78840	73.31
147 PITT	1080	1.00	79920	74.32
149 POLK	1080	1.00	81000	75.32
151 RANDOLPH	1080	1.00	82080	76.32
153 RICHMOND	1080	1.00	83160	77.33
155 ROBESON	1080	1.00	84240	78.33
157 ROCKINGHAM	1080	1.00	85320	79.34
159 ROWAN	1080	1.00	86400	80.34
161 RUTHERFORD	1080	1.00	87480	81.35
163 SAMPSON	1080	1.00	88560	82.35
165 SCOTLAND	1080	1.00	89640	83.35
167 STANLY	1080	1.00	90720	84.36
169 STOKES	1080	1.00	91800	85.36
171 SURRY	1080	1.00	92880	86.37
173 SWAIN	1080	1.00	93960	87.37
175 TRANSYLVANIA	1080	1.00	95040	88.38
177 TYRRELL	621	0.58	95661	88.95
179 UNION	1080	1.00	96741	89.96
181 VANCE	1080	1.00	97821	90.96
183 WAKE	1080	1.00	98901	91.97
185 WARREN	1080	1.00	99981	92.97
187 WASHINGTON	1080	1.00	101061	93.97
189 WATAUGA	1080	1.00	102141	94.98
191 WAYNE	1080	1.00	103221	95.98
193 WILKES	1080	1.00	104301	96.99
195 WILSON	1080	1.00	105381	97.99
197 YADKIN	1080	1.00	106461	99.00
199 YANCEY	1080	1.00	107541	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	35847	33.33	35847	33.33

(cont.)

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
1 : Men	35847	33.33	71694	66.67
2 : Women	35847	33.33	107541	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	11949	11.11	11949	11.11
1 : 14-18	11949	11.11	23898	22.22
2 : 19-21	11949	11.11	35847	33.33
3 : 22-24	11949	11.11	47796	44.44
4 : 25-34	11949	11.11	59745	55.56
5 : 35-44	11949	11.11	71694	66.67
6 : 45-54	11949	11.11	83643	77.78
7 : 55-64	11949	11.11	95592	88.89
8 : 65+	11949	11.11	107541	100.00

Table of year by quarter

year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1991	2700	2700	2700	2700	10800
1992	2700	2700	2700	2700	10800
1993	2700	2700	2700	2673	10773
1994	2673	2673	2673	2673	10692
1995	2673	2673	2673	2673	10692
1996	2673	2673	2673	2673	10692
1997	2673	2673	2673	2673	10692
1998	2700	2700	2700	2700	10800
1999	2700	2700	2700	2700	10800
2000	2700	2700	2700	2700	10800
Total	26892	26892	26892	26865	107541

The CONTENTS Procedure

Data Set Name:	STATE.NC_SIC_DIVISION_V23_FUZZED	**Observations:**	12960
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:42 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:42 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

North Carolina

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
37 NORTH CAROLINA	12960	100.00	12960	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	1080	9.09	1080	9.09
B Mining	1080	9.09	2160	18.18
C Construction	1080	9.09	3240	27.27
D Manufacturing	1080	9.09	4320	36.36
E Trans. & Utilities	1080	9.09	5400	45.45
F Wholesale trade	1080	9.09	6480	54.55
G Retail Trade	1080	9.09	7560	63.64
H FIRE	1080	9.09	8640	72.73
I Services	1080	9.09	9720	81.82
J Public Admin.	1080	9.09	10800	90.91
Other	1080	9.09	11880	100.00

Frequency Missing = 1080

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	4320	33.33	4320	33.33
1 : Men	4320	33.33	8640	66.67
2 : Women	4320	33.33	12960	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	1440	11.11	1440	11.11
1 : 14-18	1440	11.11	2880	22.22
2 : 19-21	1440	11.11	4320	33.33

(cont.)

Age group				
agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
3 : 22-24	1440	11.11	5760	44.44
4 : 25-34	1440	11.11	7200	55.56
5 : 35-44	1440	11.11	8640	66.67
6 : 45-54	1440	11.11	10080	77.78
7 : 55-64	1440	11.11	11520	88.89
8 : 65+	1440	11.11	12960	100.00

Table of year by quarter					
year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1991	324	324	324	324	1296
1992	324	324	324	324	1296
1993	324	324	324	324	1296
1994	324	324	324	324	1296
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	324	1296
2000	324	324	324	324	1296
Total	3240	3240	3240	3240	12960

1.6.7 Texas

The CONTENTS Procedure

Data Set Name:	STATE.TX_COUNTY_V23_FUZZED	**Observations:**	137376
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:50 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:50 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	275	Year
3	quarter	Num	3	278	Quarter
4	county	Char	3	218	FIPS county
5	sex	Num	3	281	Sex
6	agegroup	Num	3	284	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	221	Status: accessions
35	B_status	Char	2	223	Status: beginning-of-period employment
36	E_status	Char	2	225	Status: end-of-period employment
37	F_status	Char	2	227	Status: full-quarter employment
38	FA_status	Char	2	229	Status: flow into full-quarter employment

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
39	FJC_status	Char	2	231	Status: full-quarter job creation
40	FJD_status	Char	2	233	Status: full-quarter job destruction
41	FJF_status	Char	2	235	Status: net change in full-quarter employment
42	FS_status	Char	2	237	Status: flow out of full-quarter employment
43	H_status	Char	2	239	Status: new hires
44	H3_status	Char	2	241	Status: full-quarter new hires
45	JC_status	Char	2	243	Status: job creation
46	JD_status	Char	2	245	Status: job destruction
47	JF_status	Char	2	247	Status: net job flows
48	R_status	Char	2	249	Status: recalls
49	S_status	Char	2	251	Status: separations
50	Z_NA_status	Char	2	253	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	255	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	257	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	259	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	261	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	263	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	265	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	267	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	269	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	271	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	273	Status: average change in total earnings for separations

Texas

The FREQ Procedure

FIPS State				
state	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
48 TEXAS	137376	100.00	137376	100.00

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
000 TEXAS	540	0.39	540	0.39
001 ANDERSON	540	0.39	1080	0.79
003 ANDREWS	540	0.39	1620	1.18
005 ANGELINA	540	0.39	2160	1.57
007 ARANSAS	540	0.39	2700	1.97
009 ARCHER	540	0.39	3240	2.36
011 ARMSTRONG	540	0.39	3780	2.75
013 ATASCOSA	540	0.39	4320	3.14
015 AUSTIN	540	0.39	4860	3.54
017 BAILEY	540	0.39	5400	3.93
019 BANDERA	540	0.39	5940	4.32
021 BASTROP	540	0.39	6480	4.72
023 BAYLOR	540	0.39	7020	5.11
025 BEE	540	0.39	7560	5.50
027 BELL	540	0.39	8100	5.90
029 BEXAR	540	0.39	8640	6.29
031 BLANCO	540	0.39	9180	6.68
033 BORDEN	540	0.39	9720	7.08
035 BOSQUE	540	0.39	10260	7.47
037 BOWIE	540	0.39	10800	7.86
039 BRAZORIA	540	0.39	11340	8.25
041 BRAZOS	540	0.39	11880	8.65
043 BREWSTER	540	0.39	12420	9.04
045 BRISCOE	540	0.39	12960	9.43
047 BROOKS	540	0.39	13500	9.83
049 BROWN	540	0.39	14040	10.22
051 BURLESON	540	0.39	14580	10.61
053 BURNET	540	0.39	15120	11.01
055 CALDWELL	540	0.39	15660	11.40

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
057 CALHOUN	540	0.39	16200	11.79
059 CALLAHAN	540	0.39	16740	12.19
061 CAMERON	540	0.39	17280	12.58
063 CAMP	540	0.39	17820	12.97
065 CARSON	540	0.39	18360	13.36
067 CASS	540	0.39	18900	13.76
069 CASTRO	540	0.39	19440	14.15
071 CHAMBERS	540	0.39	19980	14.54
073 CHEROKEE	540	0.39	20520	14.94
075 CHILDRESS	540	0.39	21060	15.33
077 CLAY	540	0.39	21600	15.72
079 COCHRAN	540	0.39	22140	16.12
081 COKE	540	0.39	22680	16.51
083 COLEMAN	540	0.39	23220	16.90
085 COLLIN	540	0.39	23760	17.30
087 COLLINGSWORTH	540	0.39	24300	17.69
089 COLORADO	540	0.39	24840	18.08
091 COMAL	540	0.39	25380	18.47
093 COMANCHE	540	0.39	25920	18.87
095 CONCHO	540	0.39	26460	19.26
097 COOKE	540	0.39	27000	19.65
099 CORYELL	540	0.39	27540	20.05
101 COTTLE	540	0.39	28080	20.44
103 CRANE	540	0.39	28620	20.83
105 CROCKETT	540	0.39	29160	21.23
107 CROSBY	540	0.39	29700	21.62
109 CULBERSON	540	0.39	30240	22.01
111 DALLAM	540	0.39	30780	22.41
113 DALLAS	540	0.39	31320	22.80
115 DAWSON	540	0.39	31860	23.19
117 DEAF SMITH	540	0.39	32400	23.58
119 DELTA	540	0.39	32940	23.98
121 DENTON	540	0.39	33480	24.37
123 DEWITT	540	0.39	34020	24.76
125 DICKENS	540	0.39	34560	25.16
127 DIMMIT	540	0.39	35100	25.55
129 DONLEY	540	0.39	35640	25.94
131 DUVAL	540	0.39	36180	26.34

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
133 EASTLAND	540	0.39	36720	26.73
135 ECTOR	540	0.39	37260	27.12
137 EDWARDS	540	0.39	37800	27.52
139 ELLIS	540	0.39	38340	27.91
141 EL PASO	540	0.39	38880	28.30
143 ERATH	540	0.39	39420	28.69
145 FALLS	540	0.39	39960	29.09
147 FANNIN	540	0.39	40500	29.48
149 FAYETTE	540	0.39	41040	29.87
151 FISHER	540	0.39	41580	30.27
153 FLOYD	540	0.39	42120	30.66
155 FOARD	540	0.39	42660	31.05
157 FORT BEND	540	0.39	43200	31.45
159 FRANKLIN	540	0.39	43740	31.84
161 FREESTONE	540	0.39	44280	32.23
163 FRIO	540	0.39	44820	32.63
165 GAINES	540	0.39	45360	33.02
167 GALVESTON	540	0.39	45900	33.41
169 GARZA	540	0.39	46440	33.81
171 GILLESPIE	540	0.39	46980	34.20
173 GLASSCOCK	540	0.39	47520	34.59
175 GOLIAD	540	0.39	48060	34.98
177 GONZALES	540	0.39	48600	35.38
179 GRAY	540	0.39	49140	35.77
181 GRAYSON	540	0.39	49680	36.16
183 GREGG	540	0.39	50220	36.56
185 GRIMES	540	0.39	50760	36.95
187 GUADALUPE	540	0.39	51300	37.34
189 HALE	540	0.39	51840	37.74
191 HALL	540	0.39	52380	38.13
193 HAMILTON	540	0.39	52920	38.52
195 HANSFORD	540	0.39	53460	38.92
197 HARDEMAN	540	0.39	54000	39.31
199 HARDIN	540	0.39	54540	39.70
201 HARRIS	540	0.39	55080	40.09
203 HARRISON	540	0.39	55620	40.49
205 HARTLEY	540	0.39	56160	40.88
207 HASKELL	540	0.39	56700	41.27

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
209 HAYS	540	0.39	57240	41.67
211 HEMPHILL	540	0.39	57780	42.06
213 HENDERSON	540	0.39	58320	42.45
215 HIDALGO	540	0.39	58860	42.85
217 HILL	540	0.39	59400	43.24
219 HOCKLEY	540	0.39	59940	43.63
221 HOOD	540	0.39	60480	44.03
223 HOPKINS	540	0.39	61020	44.42
225 HOUSTON	540	0.39	61560	44.81
227 HOWARD	540	0.39	62100	45.20
229 HUDSPETH	540	0.39	62640	45.60
231 HUNT	540	0.39	63180	45.99
233 HUTCHINSON	540	0.39	63720	46.38
235 IRION	540	0.39	64260	46.78
237 JACK	540	0.39	64800	47.17
239 JACKSON	540	0.39	65340	47.56
241 JASPER	540	0.39	65880	47.96
243 JEFF DAVIS	540	0.39	66420	48.35
245 JEFFERSON	540	0.39	66960	48.74
247 JIM HOGG	540	0.39	67500	49.14
249 JIM WELLS	540	0.39	68040	49.53
251 JOHNSON	540	0.39	68580	49.92
253 JONES	540	0.39	69120	50.31
255 KARNES	540	0.39	69660	50.71
257 KAUFMAN	540	0.39	70200	51.10
259 KENDALL	540	0.39	70740	51.49
261 KENEDY	540	0.39	71280	51.89
263 KENT	540	0.39	71820	52.28
265 KERR	540	0.39	72360	52.67
267 KIMBLE	540	0.39	72900	53.07
269 KING	540	0.39	73440	53.46
271 KINNEY	540	0.39	73980	53.85
273 KLEBERG	540	0.39	74520	54.25
275 KNOX	540	0.39	75060	54.64
277 LAMAR	540	0.39	75600	55.03
279 LAMB	540	0.39	76140	55.42
281 LAMPASAS	540	0.39	76680	55.82
283 LA SALLE	540	0.39	77220	56.21

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
285 LAVACA	540	0.39	77760	56.60
287 LEE	540	0.39	78300	57.00
289 LEON	540	0.39	78840	57.39
291 LIBERTY	540	0.39	79380	57.78
293 LIMESTONE	540	0.39	79920	58.18
295 LIPSCOMB	540	0.39	80460	58.57
297 LIVE OAK	540	0.39	81000	58.96
299 LLANO	540	0.39	81540	59.36
301 LOVING	216	0.16	81756	59.51
303 LUBBOCK	540	0.39	82296	59.91
305 LYNN	540	0.39	82836	60.30
307 MCCULLOCH	540	0.39	83376	60.69
309 MCLENNAN	540	0.39	83916	61.08
311 MCMULLEN	540	0.39	84456	61.48
313 MADISON	540	0.39	84996	61.87
315 MARION	540	0.39	85536	62.26
317 MARTIN	540	0.39	86076	62.66
319 MASON	540	0.39	86616	63.05
321 MATAGORDA	540	0.39	87156	63.44
323 MAVERICK	540	0.39	87696	63.84
325 MEDINA	540	0.39	88236	64.23
327 MENARD	540	0.39	88776	64.62
329 MIDLAND	540	0.39	89316	65.02
331 MILAM	540	0.39	89856	65.41
333 MILLS	540	0.39	90396	65.80
335 MITCHELL	540	0.39	90936	66.19
337 MONTAGUE	540	0.39	91476	66.59
339 MONTGOMERY	540	0.39	92016	66.98
341 MOORE	540	0.39	92556	67.37
343 MORRIS	540	0.39	93096	67.77
345 MOTLEY	540	0.39	93636	68.16
347 NACOGDOCHES	540	0.39	94176	68.55
349 NAVARRO	540	0.39	94716	68.95
351 NEWTON	540	0.39	95256	69.34
353 NOLAN	540	0.39	95796	69.73
355 NUECES	540	0.39	96336	70.13
357 OCHILTREE	540	0.39	96876	70.52
359 OLDHAM	540	0.39	97416	70.91

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
361 ORANGE	540	0.39	97956	71.31
363 PALO PINTO	540	0.39	98496	71.70
365 PANOLA	540	0.39	99036	72.09
367 PARKER	540	0.39	99576	72.48
369 PARMER	540	0.39	100116	72.88
371 PECOS	540	0.39	100656	73.27
373 POLK	540	0.39	101196	73.66
375 POTTER	540	0.39	101736	74.06
377 PRESIDIO	540	0.39	102276	74.45
379 RAINS	540	0.39	102816	74.84
381 RANDALL	540	0.39	103356	75.24
383 REAGAN	540	0.39	103896	75.63
385 REAL	540	0.39	104436	76.02
387 RED RIVER	540	0.39	104976	76.42
389 REEVES	540	0.39	105516	76.81
391 REFUGIO	540	0.39	106056	77.20
393 ROBERTS	540	0.39	106596	77.59
395 ROBERTSON	540	0.39	107136	77.99
397 ROCKWALL	540	0.39	107676	78.38
399 RUNNELS	540	0.39	108216	78.77
401 RUSK	540	0.39	108756	79.17
403 SABINE	540	0.39	109296	79.56
405 SAN AUGUSTINE	540	0.39	109836	79.95
407 SAN JACINTO	540	0.39	110376	80.35
409 SAN PATRICIO	540	0.39	110916	80.74
411 SAN SABA	540	0.39	111456	81.13
413 SCHLEICHER	540	0.39	111996	81.53
415 SCURRY	540	0.39	112536	81.92
417 SHACKELFORD	540	0.39	113076	82.31
419 SHELBY	540	0.39	113616	82.70
421 SHERMAN	540	0.39	114156	83.10
423 SMITH	540	0.39	114696	83.49
425 SOMERVELL	540	0.39	115236	83.88
427 STARR	540	0.39	115776	84.28
429 STEPHENS	540	0.39	116316	84.67
431 STERLING	540	0.39	116856	85.06
433 STONEWALL	540	0.39	117396	85.46
435 SUTTON	540	0.39	117936	85.85

(cont.)

FIPS county				
county	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
437 SWISHER	540	0.39	118476	86.24
439 TARRANT	540	0.39	119016	86.64
441 TAYLOR	540	0.39	119556	87.03
443 TERRELL	540	0.39	120096	87.42
445 TERRY	540	0.39	120636	87.81
447 THROCKMORTON	540	0.39	121176	88.21
449 TITUS	540	0.39	121716	88.60
451 TOM GREEN	540	0.39	122256	88.99
453 TRAVIS	540	0.39	122796	89.39
455 TRINITY	540	0.39	123336	89.78
457 TYLER	540	0.39	123876	90.17
459 UPSHUR	540	0.39	124416	90.57
461 UPTON	540	0.39	124956	90.96
463 UVALDE	540	0.39	125496	91.35
465 VAL VERDE	540	0.39	126036	91.75
467 VAN ZANDT	540	0.39	126576	92.14
469 VICTORIA	540	0.39	127116	92.53
471 WALKER	540	0.39	127656	92.92
473 WALLER	540	0.39	128196	93.32
475 WARD	540	0.39	128736	93.71
477 WASHINGTON	540	0.39	129276	94.10
479 WEBB	540	0.39	129816	94.50
481 WHARTON	540	0.39	130356	94.89
483 WHEELER	540	0.39	130896	95.28
485 WICHITA	540	0.39	131436	95.68
487 WILBARGER	540	0.39	131976	96.07
489 WILLACY	540	0.39	132516	96.46
491 WILLIAMSON	540	0.39	133056	96.86
493 WILSON	540	0.39	133596	97.25
495 WINKLER	540	0.39	134136	97.64
497 WISE	540	0.39	134676	98.03
499 WOOD	540	0.39	135216	98.43
501 YOAKUM	540	0.39	135756	98.82
503 YOUNG	540	0.39	136296	99.21
505 ZAPATA	540	0.39	136836	99.61
507 ZAVALA	540	0.39	137376	100.00

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	45792	33.33	45792	33.33
1 : Men	45792	33.33	91584	66.67
2 : Women	45792	33.33	137376	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	15264	11.11	15264	11.11
1 : 14-18	15264	11.11	30528	22.22
2 : 19-21	15264	11.11	45792	33.33
3 : 22-24	15264	11.11	61056	44.44
4 : 25-34	15264	11.11	76320	55.56
5 : 35-44	15264	11.11	91584	66.67
6 : 45-54	15264	11.11	106848	77.78
7 : 55-64	15264	11.11	122112	88.89
8 : 65+	15264	11.11	137376	100.00

Table of year by quarter

year(Year)	quarter(Quarter)				Total
	1	2	3	4	
1995	6858	6858	6858	6858	27432
1996	6858	6858	6858	6858	27432
1997	6858	6858	6858	6858	27432
1998	6885	6885	6885	6885	27540
1999	6885	6885	6885	6885	27540
Total	34344	34344	34344	34344	137376

The CONTENTS Procedure

Data Set Name:	STATE.TX_SIC_DIVISION_V23_FUZZED	**Observations:**	6480
Member Type:	DATA	**Variables:**	60
Engine:	V8	**Indexes:**	0
Created:	18:50 Thursday, May 16, 2002	**Observation Length:**	288
Last Modified:	18:50 Thursday, May 16, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
1	state	Char	2	216	FIPS State
2	year	Num	3	273	Year
3	quarter	Num	3	276	Quarter
4	sic_division	Char	1	218	SIC Division
5	sex	Num	3	279	Sex
6	agegroup	Num	3	282	Age group
7	A	Num	8	0	Accessions
8	B	Num	8	8	Beginning-of-period employment
9	E	Num	8	16	End-of-period employment
10	F	Num	8	24	Full-quarter employment
11	FA	Num	8	32	Flow into full-quarter employment
12	FJC	Num	8	40	Full-quarter job creation
13	FJD	Num	8	48	Full-quarter job destruction
14	FJF	Num	8	56	Net change in full-quarter employment
15	FS	Num	8	64	Flow out of full-quarter employment
16	H	Num	8	72	New hires
17	H3	Num	8	80	Full-quarter new hires
18	JC	Num	8	88	Job creation
19	JD	Num	8	96	Job destruction
20	JF	Num	8	104	Net job flows
21	R	Num	8	112	Recalls
22	S	Num	8	120	Separations
23	Z_NA	Num	8	128	Average periods of non-employment for accessions
24	Z_NH	Num	8	136	Average periods of non-employment for new hires
25	Z_NR	Num	8	144	Average periods of non-employment for recalls
26	Z_NS	Num	8	152	Average periods of non-employment for separations

(cont.)

——Variables Ordered by Position——

#	Variable	Type	Len	Pos	Label
27	Z_W2	Num	8	160	Average earnings of end-of-period employees
28	Z_W3	Num	8	168	Average earnings of full-quarter employees
29	Z_WFA	Num	8	176	Average earnings of transits to full-quarter status
30	Z_WFS	Num	8	184	Average earnings of separations from full-quarter status
31	Z_WH3	Num	8	192	Average earnings of full-quarter new hires
32	Z_dWA	Num	8	200	Average change in total earnings for accessions
33	Z_dWS	Num	8	208	Average change in total earnings for separations
34	A_status	Char	2	219	Status: accessions
35	B_status	Char	2	221	Status: beginning-of-period employment
36	E_status	Char	2	223	Status: end-of-period employment
37	F_status	Char	2	225	Status: full-quarter employment
38	FA_status	Char	2	227	Status: flow into full-quarter employment
39	FJC_status	Char	2	229	Status: full-quarter job creation
40	FJD_status	Char	2	231	Status: full-quarter job destruction
41	FJF_status	Char	2	233	Status: net change in full-quarter employment
42	FS_status	Char	2	235	Status: flow out of full-quarter employment
43	H_status	Char	2	237	Status: new hires
44	H3_status	Char	2	239	Status: full-quarter new hires
45	JC_status	Char	2	241	Status: job creation
46	JD_status	Char	2	243	Status: job destruction
47	JF_status	Char	2	245	Status: net job flows
48	R_status	Char	2	247	Status: recalls
49	S_status	Char	2	249	Status: separations
50	Z_NA_status	Char	2	251	Status: average periods of non-employment for accessions
51	Z_NH_status	Char	2	253	Status: average periods of non-employment for new hires
52	Z_NR_status	Char	2	255	Status: average periods of non-employment for recalls
53	Z_NS_status	Char	2	257	Status: average periods of non-employment for separations
54	Z_W2_status	Char	2	259	Status: average earnings of end-of-period employees
55	Z_W3_status	Char	2	261	Status: average earnings of full-quarter employees
56	Z_WFA_status	Char	2	263	Status: average earnings of transits to full-quarter status
57	Z_WFS_status	Char	2	265	Status: average earnings of separations from full-quarter status
58	Z_WH3_status	Char	2	267	Status: average earnings of full-quarter new hires
59	Z_dWA_status	Char	2	269	Status: average change in total earnings for accessions
60	Z_dWS_status	Char	2	271	Status: average change in total earnings for separations

Texas

The FREQ Procedure

FIPS State

state	Frequency	Percent	CumulativeFrequency	CumulativePercent
48 TEXAS	6480	100.00	6480	100.00

SIC Division

sic_division	Frequency	Percent	CumulativeFrequency	CumulativePercent
A Agriculture etc.	540	9.09	540	9.09
B Mining	540	9.09	1080	18.18
C Construction	540	9.09	1620	27.27
D Manufacturing	540	9.09	2160	36.36
E Trans. & Utilities	540	9.09	2700	45.45
F Wholesale trade	540	9.09	3240	54.55
G Retail Trade	540	9.09	3780	63.64
H FIRE	540	9.09	4320	72.73
I Services	540	9.09	4860	81.82
J Public Admin.	540	9.09	5400	90.91
Other	540	9.09	5940	100.00

Frequency Missing = 540

Sex

sex	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All	2160	33.33	2160	33.33
1 : Men	2160	33.33	4320	66.67
2 : Women	2160	33.33	6480	100.00

Age group

agegroup	Frequency	Percent	CumulativeFrequency	CumulativePercent
0 : All Ages	720	11.11	720	11.11
1 : 14-18	720	11.11	1440	22.22
2 : 19-21	720	11.11	2160	33.33

(cont.)

Age group				
agegroup	**Frequency**	**Percent**	**CumulativeFrequency**	**CumulativePercent**
3 : 22-24	720	11.11	2880	44.44
4 : 25-34	720	11.11	3600	55.56
5 : 35-44	720	11.11	4320	66.67
6 : 45-54	720	11.11	5040	77.78
7 : 55-64	720	11.11	5760	88.89
8 : 65+	720	11.11	6480	100.00

Table of year by quarter					
year(Year)	**quarter(Quarter)**				**Total**
	1	**2**	**3**	**4**	
1995	324	324	324	324	1296
1996	324	324	324	324	1296
1997	324	324	324	324	1296
1998	324	324	324	324	1296
1999	324	324	324	324	1296
Total	1620	1620	1620	1620	6480

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Chapter 2

Input sources

This section describes the data processing steps. Figure 2.1 gives a generic overview of that process. A more detailed flowchart is provided in Figure A.1 on page 148 in Appendix A.

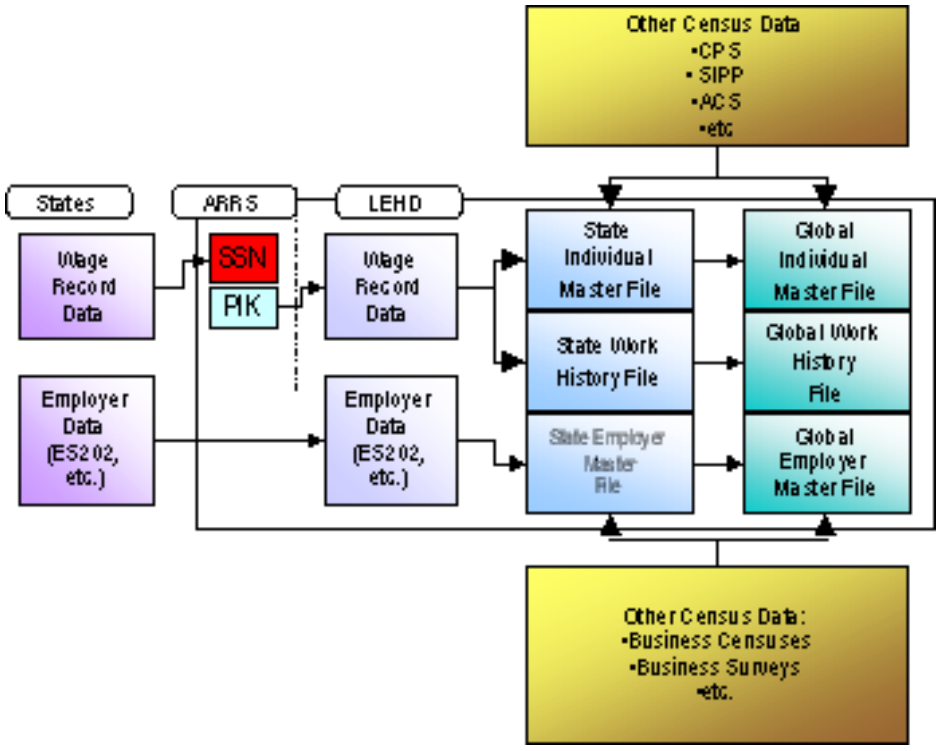


Figure 2.1: Overview of data processing

2.1 Receipt of data

The data acquisition process starts with receipt of the data carrier (tape, CDROM) by the U.S. Census Bureau. If the data is on CDROM, readin is done at LEHD, otherwise this task is performed by the Administrative Records Research Staff (ARRS). Data entry, including method and date of receipt, and number of records, are recorded both at ARRS and at LEHD in either case.

2.2 Standardization

The goal of much of LEHD processing is to create a homogeneous analytical product. Thus all data processing at LEHD standardizes variable concepts, names, and formats. Harmonization is necessary because different states have different ways of recording wages, UI account numbers, and other data items. In addition, while these identifiers may be unique within a state, they may not be so across different states. After harmonization, LEHD files contain a unique state firm identifier (SEIN) used in subsequent processing. Now that BLS reporting unit information is available on certain employer-level files, the reporting unit (RUN) will be incorporated into the business identifier permitting analyses at the establishment level. (LEHD program EDE project version 3 will incorporate the reporting unit.) Similar standardization treatment is given to other variables.

2.3 SSN editing

SSN can and do have coding errors. Since the EDE requires a consistent longitudinal identifier for each individual, such coding errors introduce bias into any of the measures computed. LEHD has developed a process by which possibly miscoded records are matched back to an otherwise consistent time-series for a given SSN. This processing is done before anonymization, because it requires the original SSN. Not all state data are processed this way.

2.4 Anonymization

The first processing that the data receive, if applicable, is anonymization. The administrative data received from the states contain individual and firm identifiers. Identifiers include, but are not limited to, first and last name, Social Security Number (SSN), state unemployment insurance account number SEIN, and federal EIN. As per the current Memoranda of Understanding (MOU, also called Data Use Agreements by some states), firm identifiers are carried along unchanged throughout LEHD processing. Personal identifiers, on the other hand, are either deleted or modified in such a manner as to mask the original identifier. Thus, the SSN is replaced by a Census internal identifier (Protected Identity Key, PIK). The original SSN can not be re-inferred, since the algorithm used to associate PIKs to SSNs is not accessible to LEHD personnel. As an additional precaution, individual names are deleted from all files containing them.

After having passed quality control within ARRS, the data are transferred to the LEHD computers. All processing from here on is performed exclusively within the secure computing environment at LEHD by LEHD personnel, using PIKs as identifiers. This process is sometimes referred to as “PIKizing.”

2.5 Creation of state-specific characteristics files

The data are next prepared for the process of extracting information on jobs, firms, and individuals. It is at this stage that information available within Census on both the individual and the employer is added to the data. Three related files are created for every state. The first of these is the Individual Characteristics File (ICF), which contains information on the individual, including demographic information added from the Census Numident/PCF file and links to any Census survey in which that individual may have participated. The actual survey respondent data are linked on a case-by-case basis. The second file is the Employment History File (EHF), which contains a detailed quarter-by-quarter time series of an individual’s working activity within the state. The third file is the Employer Characteristics File (ECF), which contains both information on employers active within the state as provided in the employer-based data received from the states and indicators for the presence of that employer in Census data products (business surveys, business censuses, etc.).

2.5.1 Demographic products

Many individuals have appeared in at least one of the eligible Census demographic products, and their detailed demographic information from those surveys can be linked to the extensive longitudinal data gleaned from the state records.

2.5.2 Census PCF

These data, which contain information on date of birth, place of birth, race and sex, are maintained by ARRS under a Memorandum of Understanding with the Social Security Administration, being based on the SSA Numident. The LEHD Program matches date of birth, sex, race, and place of birth using the PIK. This processing is done on the ARRS system to protect the confidentiality of the PIK-SSN cross walk.

2.5.3 Economic censuses and annual surveys

These data include the complete 1987, 1992 and 1997 economic censuses, all annual surveys of manufacturing, service, trade, transportation and communication industries and selected, approved fields from the Census Bureau's establishment master file. Linkage to these data is based upon exact EIN matches, supplemented with statistical matching to recover establishments.

Chapter 3

The Individual Characteristics File

3.1 Overview

The *Individual Characteristics File* (ICF)[1] for each state contains one record for every person who is ever employed in that state over the time period spanned by the state's unemployment insurance records. The ICF is created in several steps. The information in the UI wage records is processed first. The resulting data are then merged with data on each individual from the Census PCF file. The data are then linked to the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP). (A link to the American Community Survey (ACS) will be implemented in a future release.) Finally age and sex are imputed for those people who do not match an identifier in the PCF file. Then, the ICF goes through final processing. Each step is briefly described below.

3.2 Initial processing of the UI wage records

The initial input data set for the ICF is the Employment History File. This data file contains PIKs, wages, year, quarter, and state firm identifiers (SEINs). The input records are in the format job/year/quarter, resulting in multiple records per PIK. The initial processing compiles a list of unique PIKs and counts the number of unique employers for each PIK in each year and year/quarter. PIKs which never have positive earnings are dropped.

3.3 Merge data from the Census PCF file

The PCF contains information about gender, race, citizenship status, place of birth, date of birth, and date of death for approximately 97% of the PIKs in the UI wage data. This information is merged onto the unique list of PIKs created in the first step.

3.4 Create links to the CPS and SIPP

Using PIK/survey identifier crosswalks created by Census, the CPS and SIPP ID variables are merged onto the unique list of PIKs from Step Two. These identification variables enable one to link individuals to the 1983-1997 CPS surveys and the 1984, 1990-1993, and 1996 SIPP panels.

3.5 Age and sex imputation and final processing

Since approximately 3% of the PIKs found in the UI wage records do not match to the PCF file, multiple imputation methods are used to assign age and gender to these individuals. The gender imputation is done using a logit model to predict the probability of being male and then assigning gender based on this probability. The age imputation is done

[1] See Appendix G on page 163 for detailed information on the creation of the ICF.

using a multinomial logit to predict the probability of being in a given age category and then assigning an age based on this probability and the distribution of ages within the category. The final processing creates the actual ICF data set, which conforms to all LEHD variable and data set specifications.

3.6 Example contents listing

/data/master/Individual/current/sasdata/indmastil.sas7bdat

The CONTENTS Procedure

Data Set Name:	THISLIB.INDMASTIL	**Observations:**	12071010
Member Type:	DATA	**Variables:**	212
Engine:	V8	**Indexes:**	1
Created:	16:55 Thursday, April 25, 2002	**Observation Length:**	816
Last Modified:	16:09 Thursday, May 9, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

—–Engine/Host Dependent Information—–	
Data Set Page Size:	65536
Number of Data Set Pages:	150890
First Data Page:	1
Max Obs per Page:	80
Obs in First Data Page:	37
Index File Page Size:	8192
Number of Index File Pages:	31261
Number of Data Set Repairs:	0
File Name:	/data/master/Individual/current/sasdata/indmastil.sas7bdat
Release Created:	8.0202M0
Host Created:	OSF1
Inode Number:	11560
Access Permission:	rw-rw—-
Owner Name:	ander353
File Size (bytes):	9888735232

—–Alphabetic List of Variables and Attributes—–

#	Variable	Type	Len	Pos	Format	Label
198	HID1	Char	5	413		CPS Household ID for the first time this Pik matches CPS

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
200	HID2	Char	5	420		CPS Household ID for the second time this Pik matches CPS
118	HSRC23	Char	7	157		Basic street address conflict flag
116	HUID	Char	35	115		Admin record HUID
117	HUIDSRC	Char	7	150		Admin record source of HUID
199	PPOSOLD1	Char	2	418		CPS Person ID variable for first time Pik matches CPS
201	PPOSOLD2	Char	2	425		CPS Person ID variable for second time Pik matches CPS
31	SPTNMF1985	Num	3	534		Number of employers in year 1985
32	SPTNMF1986	Num	3	537		Number of employers in year 1986
33	SPTNMF1987	Num	3	540		Number of employers in year 1987
34	SPTNMF1988	Num	3	543		Number of employers in year 1988
35	SPTNMF1989	Num	3	546		Number of employers in year 1989
36	SPTNMF1990	Num	3	549		Number of employers in year 1990
37	SPTNMF1991	Num	3	552		Number of employers in year 1991
38	SPTNMF1992	Num	3	555		Number of employers in year 1992
39	SPTNMF1993	Num	3	558		Number of employers in year 1993
40	SPTNMF1994	Num	3	561		Number of employers in year 1994
41	SPTNMF1995	Num	3	564		Number of employers in year 1995
42	SPTNMF1996	Num	3	567		Number of employers in year 1996
43	SPTNMF1997	Num	3	570		Number of employers in year 1997
44	SPTNMF1998	Num	3	573		Number of employers in year 1998
45	SPTNMF1999	Num	3	576		Number of employers in year 1999
46	SPTNMF2000	Num	3	579		Number of employers in year 2000
47	SPTNMF2001	Num	3	582		Number of employers in year 2001
212	SSNFLAG	Char	1	503		Illegal SSN Range Flag
48	SY19851	Num	3	585		Number of employers in year 1985 quarter 1
49	SY19852	Num	3	588		Number of employers in year 1985 quarter 2
50	SY19853	Num	3	591		Number of employers in year 1985 quarter 3
51	SY19854	Num	3	594		Number of employers in year 1985 quarter 4
52	SY19861	Num	3	597		Number of employers in year 1986 quarter 1
53	SY19862	Num	3	600		Number of employers in year 1986 quarter 2
54	SY19863	Num	3	603		Number of employers in year 1986 quarter 3

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
55	SY19864	Num	3	606		Number of employers in year 1986 quarter 4
56	SY19871	Num	3	609		Number of employers in year 1987 quarter 1
57	SY19872	Num	3	612		Number of employers in year 1987 quarter 2
58	SY19873	Num	3	615		Number of employers in year 1987 quarter 3
59	SY19874	Num	3	618		Number of employers in year 1987 quarter 4
60	SY19881	Num	3	621		Number of employers in year 1988 quarter 1
61	SY19882	Num	3	624		Number of employers in year 1988 quarter 2
62	SY19883	Num	3	627		Number of employers in year 1988 quarter 3
63	SY19884	Num	3	630		Number of employers in year 1988 quarter 4
64	SY19891	Num	3	633		Number of employers in year 1989 quarter 1
65	SY19892	Num	3	636		Number of employers in year 1989 quarter 2
66	SY19893	Num	3	639		Number of employers in year 1989 quarter 3
67	SY19894	Num	3	642		Number of employers in year 1989 quarter 4
68	SY19901	Num	3	645		Number of employers in year 1990 quarter 1
69	SY19902	Num	3	648		Number of employers in year 1990 quarter 2
70	SY19903	Num	3	651		Number of employers in year 1990 quarter 3
71	SY19904	Num	3	654		Number of employers in year 1990 quarter 4
72	SY19911	Num	3	657		Number of employers in year 1991 quarter 1
73	SY19912	Num	3	660		Number of employers in year 1991 quarter 2
74	SY19913	Num	3	663		Number of employers in year 1991 quarter 3
75	SY19914	Num	3	666		Number of employers in year 1991 quarter 4

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
76	SY19921	Num	3	669		Number of employers in year 1992 quarter 1
77	SY19922	Num	3	672		Number of employers in year 1992 quarter 2
78	SY19923	Num	3	675		Number of employers in year 1992 quarter 3
79	SY19924	Num	3	678		Number of employers in year 1992 quarter 4
80	SY19931	Num	3	681		Number of employers in year 1993 quarter 1
81	SY19932	Num	3	684		Number of employers in year 1993 quarter 2
82	SY19933	Num	3	687		Number of employers in year 1993 quarter 3
83	SY19934	Num	3	690		Number of employers in year 1993 quarter 4
84	SY19941	Num	3	693		Number of employers in year 1994 quarter 1
85	SY19942	Num	3	696		Number of employers in year 1994 quarter 2
86	SY19943	Num	3	699		Number of employers in year 1994 quarter 3
87	SY19944	Num	3	702		Number of employers in year 1994 quarter 4
88	SY19951	Num	3	705		Number of employers in year 1995 quarter 1
89	SY19952	Num	3	708		Number of employers in year 1995 quarter 2
90	SY19953	Num	3	711		Number of employers in year 1995 quarter 3
91	SY19954	Num	3	714		Number of employers in year 1995 quarter 4
92	SY19961	Num	3	717		Number of employers in year 1996 quarter 1
93	SY19962	Num	3	720		Number of employers in year 1996 quarter 2
94	SY19963	Num	3	723		Number of employers in year 1996 quarter 3
95	SY19964	Num	3	726		Number of employers in year 1996 quarter 4
96	SY19971	Num	3	729		Number of employers in year 1997 quarter 1

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
97	SY19972	Num	3	732		Number of employers in year 1997 quarter 2
98	SY19973	Num	3	735		Number of employers in year 1997 quarter 3
99	SY19974	Num	3	738		Number of employers in year 1997 quarter 4
100	SY19981	Num	3	741		Number of employers in year 1998 quarter 1
101	SY19982	Num	3	744		Number of employers in year 1998 quarter 2
102	SY19983	Num	3	747		Number of employers in year 1998 quarter 3
103	SY19984	Num	3	750		Number of employers in year 1998 quarter 4
104	SY19991	Num	3	753		Number of employers in year 1999 quarter 1
105	SY19992	Num	3	756		Number of employers in year 1999 quarter 2
106	SY19993	Num	3	759		Number of employers in year 1999 quarter 3
107	SY19994	Num	3	762		Number of employers in year 1999 quarter 4
108	SY20001	Num	3	765		Number of employers in year 2000 quarter 1
109	SY20002	Num	3	768		Number of employers in year 2000 quarter 2
110	SY20003	Num	3	771		Number of employers in year 2000 quarter 3
111	SY20004	Num	3	774		Number of employers in year 2000 quarter 4
112	SY20011	Num	3	777		Number of employers in year 2001 quarter 1
113	SY20012	Num	3	780		Number of employers in year 2001 quarter 2
114	SY20013	Num	3	783		Number of employers in year 2001 quarter 3
115	SY20014	Num	3	786		Number of employers in year 2001 quarter 4
171	alclmdd	Char	2	308		Actual Life Claim Date Day
170	alclmmm	Char	2	306		Actual Life Claim Date Month
169	alclmyy	Char	4	302		Actual Life Claim Date Year
140	alien	Char	1	201		Ever Alien Flag
136	bestrace	Char	1	197		Numident Best Last Race

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
141	citizcc	Char	2	202		Citizen Change Date Century
139	citizen	Char	1	200		citizen code
142	citizyy	Char	2	204		Citizen Change Date Year
202	count_sipppanels	Num	3	795		Number of SIPP Panels where this PIK is found
4	county_live	Char	5	97		
5	countyliveimputed	Char	1	102		
23	cpsdupik1	Num	3	516		Pik duplicated within year,mapped to multiple CPS IDs,single year
24	cpsdupik2	Num	3	519		Pik duplicated within year,mapped to multiple CPS IDs,single year
22	cpsdupikcy	Num	3	513		Pik duplicated across years,mapped to multiple CPS IDs, different years
12	dob	Num	8	24		SAS Date Value Date of Birth
192	dobddmissing	Char	1	411		Day of birth missing in Numident
125	dobddo	Char	2	177		DOB Day - for PCF excl., not for StARS
190	dobeditdd	Char	1	409		Change day to lt 31 for months with only 30 days
17	dobedityy	Char	1	107		Firstjobage ge 101, subtract 100 years from DOB
20	dobimputed	Char	1	109		
11	dobmissing	Char	1	104		Date of birth missing in Numident
14	dobmissing_nomatch	Char	1	106		DOB missing due to no numident match
19	dobmissing_set	Char	1	108		Firstjobage<=0 or 90<=Firstjobage<=100, set dob missing
191	dobmmmissing	Char	1	410		Month of birth missing in Numident
124	dobmmo	Char	2	175		DOB Month - for PCF excl., not for StARS
10	dobyymissing	Char	1	103		Year of birth missing in Numident
123	dobyyo	Char	4	171		DOB Year - for PCF excl., not for StARS
196	dod	Num	8	80		SAS Date Value Date of Death
128	dodddo	Char	2	185		Best DOD Day
127	dodmmo	Char	2	183		Best DOD Month
129	dodsrco	Char	3	187		Best DOD Source
126	dodyyo	Char	4	179		Best DOD Year
130	dthsrc	Char	2	190		Numident Source Reporting Death

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
203	dupinsipppanel	Num	3	798		Number of SIPP Panels where Duplicate INTIDs match to PIK
2	edimp1	Num	3	507		Imputed education length
146	editpob	Char	1	221		Num Code-Special/Glob edit-POBST,POBFIN
1	educat1	Num	3	504		Imputed education category
16	firstjobage	Num	8	40		
18	firstjobagecat	Num	8	48		
15	firstjobdate	Num	8	32	MMDDYY10.	
6	flag_latlong	Num	8	0		
133	gender	Char	1	194		Numident Gender (O=Other,M=Male,F=Fem)
138	hhrace	Char	1	199		Imputed race from 1040: children <= 18
9	implicate	Num	3	510		
121	irs1p	Char	1	168		1% Sample Recode (0=no, 1=yes)
120	irs20p	Char	1	167		20% Sample Recode (0=no, 1=yes)
119	irscut	Char	3	164		100% Cut Number
7	latitude_live	Num	8	8		
8	longitude_live	Num	8	16		
174	lsdtdd	Char	2	316		Last Seen Date Day
173	lsdtmm	Char	2	314		Last Seen Date Month
172	lsdtyy	Char	4	310		Last Seen Date Year
151	matchfa	Char	1	226		Father"s name matches asian list
148	matchfh	Char	1	223		Father"s name matches hispanic list
154	matchfi	Char	1	229		Father"s name matches Indian list
150	matchma	Char	1	225		Mother"s name matches asian list
147	matchmh	Char	1	222		Mother"s name matches hispanic list
153	matchmi	Char	1	228		Mother"s name matches Indian list
152	matchrha	Char	1	227		Record Holder"s name matches asian list
149	matchrhh	Char	1	224		Record Holder"s name matches hisp list
155	matchrhi	Char	1	230		Record Holder"s name matches Indian list
27	mnthcps1	Num	3	528		Month of first time this Pik matches CPS
28	mnthcps2	Num	3	531		Month of second time this Pik matches CPS
195	nbday	Num	8	72		Numeric day of birth

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
194	nbmon	Num	8	64		Numeric month of birth
193	nbyear	Num	8	56		Numeric year of birth
165	ocycc	Char	2	294		Numident Century of Oldest Cycle Date
168	ocydd	Char	2	300		Numident Day of Oldest Cycle Date
167	ocymm	Char	2	298		Numident Month of Oldest Cycle Date
166	ocyyy	Char	2	296		Numident Year of Oldest Cycle Date
135	origrace	Char	1	196		Numid Original (Oldest non-blank) Race
208	panelsipp1	Num	3	801		SIPP PANEL of first INTID
209	panelsipp2	Num	3	804		SIPP PANEL of first INTID
210	panelsipp3	Num	3	807		SIPP PANEL of first INTID
211	panelsipp4	Num	3	810		SIPP PANEL of first INTID
159	pbaian	Char	7	252		Prob AI/AN Non-Hisp
163	pbaianh	Char	7	280		Prob AI/AN Hisp
158	pbapi	Char	7	245		Prob API Non-Hisp
162	pbapih	Char	7	273		Prob API Hisp
157	pbblk	Char	7	238		Prob Black, Non-Hisp
161	pbblkh	Char	7	266		Prob Black Hisp
186	pbdthaif	Char	7	395		Probability of Death AIAN Female
181	pbdthaim	Char	7	360		Probability of Death AIAN Male
185	pbdthasf	Char	7	388		Probability of Death API Female
180	pbdthasm	Char	7	353		Probability of Death API Male
184	pbdthblf	Char	7	381		Probability of Death Black Female
179	pbdthblm	Char	7	346		Probability of Death Black Male
187	pbdthhif	Char	7	402		Probability of Death Hispanic Female
182	pbdthhim	Char	7	367		Probability of Death Hispanic Male
183	pbdthwhf	Char	7	374		Probability of Death White Female
178	pbdthwhm	Char	7	339		Probability of Death White Male
177	pbmale	Char	7	332		Probability Male (from Gender Model)
156	pbwht	Char	7	231		Prob White, Non-Hisp
160	pbwhth	Char	7	259		Prob White Hisp
3	pik	Char	9	88		Protected Identification Key
144	pobcity	Char	12	208		city,county of birth
145	pobfin	Char	1	220		POB foreign indicator
143	pobst	Char	2	206		state,country of birth

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Format	Label
131	r1pmort1	Char	1	192		Asgnd Mort fr Prbs (Ind) + Rnd No
132	r1pmort2	Char	1	193		Asgnd Mort fr Prbs (HH) + Rnd No
137	r1prace	Char	1	198		Assigned race using probability+random2
134	r1psex	Char	1	195		Assgnd Sex from Probs. and Rnd. Num.
197	race	Char	1	412		Census numident race codes=bestrace var
175	ran_num1	Char	7	318		Random Number 1 (for Gender)
176	ran_num3	Char	7	325		Random Number 3 (for Mortality)
164	random2	Char	7	287		Random Number 2 (for Race)
13	sex	Char	1	105		Numident variable=gender
21	seximputed	Char	1	110		
204	sippintid1	Char	19	427		First Internal SIPP ID matched to PIK
205	sippintid2	Char	19	446		Second Internal SIPP ID matched to PIK
206	sippintid3	Char	19	465		Third Internal SIPP ID matched to PIK
207	sippintid4	Char	19	484		Fourth Internal SIPP ID matched to PIK
29	source	Char	2	111		source of data
30	sourcetp	Char	2	113		type of source
122	ssn3st	Char	2	169		State of SSN issuance
25	yearcps1	Num	3	522		First year this Pik matches CPS
26	yearcps2	Num	3	525		Second year this Pik matches CPS
188	yopcf	Num	3	789		Year of PCF extract
189	yose	Num	3	792		Year of StAR extract

——Alphabetic List of Indexes and Attributes——

#	Index	UniqueOption	# ofUniqueValues
1	pik	YES	12071010

Chapter 4

The Employment History File

4.1 Overview

The *Employment History File* (EHF)[1] is designed to store the complete in-state work history for each individual that appears in the UI wage records. The EHF for each state contains one record for each employee-employer combination in that state in each year. Every individual who is employed during a given year will then have one observation per employer for that year. The data in the EHF are stored in the form of annual records mainly to save space. Annual earnings have been calculated for future use, but the quarterly earnings variables are also retained in the data. The current job flow analysis focuses entirely on quarterly earnings and quarterly employment flows. For the purposes of the worker and job flow analysis, the only necessary variables are the person and employer identifiers and the quarterly earnings variables. The presence of positive quarterly earnings is used in the job flow analysis not only to compute earnings and payroll statistics but also to determine an individual's employment status each quarter. This information is used for calculating flows of workers into and out of jobs. An individual is considered to be employed by a particular employer during a quarter if (1) a record is present in the raw data for that particular PIK/SEIN combination and (2) the wage field for this record contains a positive (non-zero) value. Together, the quarterly employment status and the quarterly earnings variable provide sufficient information to compute all of the other statistics used in the employment flow analysis.

[1] See Appendix F on page 160 for detailed information on the creation of the EHF.

4.1.1 Example contents listing

/data/master/Employment_history/sasdata/emphisil.sas7bdat

The CONTENTS Procedure

Data Set Name:	THISLIB.EMPHISIL	**Observations:**	99628338
Member Type:	DATA	**Variables:**	11
Engine:	V8	**Indexes:**	4
Created:	15:31 Tuesday, March 12, 2002	**Observation Length:**	62
Last Modified:	17:42 Tuesday, March 12, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	NO
Label:			

——Engine/Host Dependent Information——	
Data Set Page Size:	8192
Number of Data Set Pages:	760524
First Data Page:	1
Max Obs per Page:	131
Obs in First Data Page:	77
Index File Page Size:	8192
Number of Index File Pages:	1385178
Number of Data Set Repairs:	0
File Name:	/data/master/Employment_history/ sasdata/emphisil.sas7bdat
Release Created:	8.0101M0
Host Created:	OSF1
Inode Number:	25329
Access Permission:	rw-rw—-
Owner Name:	lenge002
File Size (bytes):	6230220800

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Label
6	earn1	Num	5	42	Qtr 1 earnings
7	earn2	Num	5	47	Qtr 2 earnings
8	earn3	Num	5	52	Qtr 3 earnings

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Label
9	earn4	Num	5	57	Qtr 4 earnings
4	earn_ann	Num	5	37	Annual earnings
11	ein	Char	9	25	
1	pik	Char	9	0	Protected Identification Key
10	sein	Char	12	13	State Employer Identification Number
3	source	Char	2	9	Source of data (FIPS state code/0=Fed)
5	sourcetp	Char	2	11	Type of source
2	year	Num	3	34	Calendar year

——Alphabetic List of Indexes and Attributes——

#	Index	# ofUniqueValues	Variables
1	pik_sein_year	99628338	pik sein year
2	pik_year	70286449	pik year
3	pik_year_sein	99628338	pik year sein
4	sein_year	2867125	sein year

Chapter 5

The Employer Characteristics File

5.1 Overview

The *Employer Characteristics File* (ECF)[1] is based on information from each state's Department of Employment Security. The data are collected as part of the Covered Employment and Wages (CEW) program, also known as the ES-202 program, which is administered by the U.S. Bureau of Labor Statistics (BLS). This cooperative program between the states and the federal government collects employment, payroll, and location information from employers covered by state unemployment insurance programs.

In order to calculate the job flow statistics by county and Standard Industry Classification (SIC) additional data processing is necessary. The original ES-202 data as received from the states are establishment based. However the individual wage and employment data from the unemployment insurance program do not contain sufficient information to identify the place of work for employees of multi-unit firms. A multi-unit firm is likely to have establishments in more than one county and/or SIC and a method must be chosen to assign a firm to one county and SIC. We assign the firm the employment-weighted mode (most prevalent) county and SIC of its establishments. [2]

As a final step we fill missing values of county and SIC using non-missing data in adjacent year quarters. If a firm is likely to change industries or county relatively infrequently then this is a reasonable procedure, but this may understate movement for firms that have missing data and relocate often. The result of the data processing described above is a file with information on county, SIC, and the number of employees for every SEIN that has at least one employee with positive earnings in a given year-quarter.

[1] See Appendix J on page 171 for detailed information on the creation of the ECF.

[2] Version 3 of the EDE project will work with ES-202 data at the reporting unit level to improve this method for imputing county.

5.1.1 Example contents listing

/data/master/Employer/sasdata/current/il/sein/il_employer_char.sas7bdat

The CONTENTS Procedure

Data Set Name:	THISLIB.IL_EMPLOYER_CHAR	**Observations:**	12041555
Member Type:	DATA	**Variables:**	52
Engine:	V8	**Indexes:**	2
Created:	0:21 Saturday, March 9, 2002	**Observation Length:**	352
Last Modified:	0:21 Saturday, March 9, 2002	**Deleted Observations:**	0
Protection:		**Compressed:**	NO
Data Set Type:		**Sorted:**	YES
Label:			

—–Engine/Host Dependent Information—–	
Data Set Page Size:	32768
Number of Data Set Pages:	130888
First Data Page:	1
Max Obs per Page:	92
Obs in First Data Page:	67
Index File Page Size:	8192
Number of Index File Pages:	90243
Number of Data Set Repairs:	0
File Name:	/data/master/Employer/sasdata/current/il/sein/il_employer_char.sas7bdat
Release Created:	8.0202M0
Host Created:	OSF1
Inode Number:	25473
Access Permission:	rw-rw—-
Owner Name:	mckin013
File Size (bytes):	4288946176

—–Alphabetic List of Variables and Attributes—–

#	Variable	Type	Len	Pos	Label
50	BETA1	Num	8	264	Beta Fuzz Factor 1
23	COUNTY	Char	3	329	FIPS County CCC
24	COUNTY_EMP	Char	3	332	FIPS County CCC EMPLOY Weight

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Label
49	DELTA	Num	8	256	Original Fuzz Factor
25	EIN	Char	9	335	
52	FUZZ_CAT	Num	8	280	Fuzz Category
2	NUM_ESTABS	Num	8	0	Number of Establishments
5	QUARTER	Num	3	347	Quarter Q
51	RAMP1	Num	8	272	Ramp Fuzz Factor 1
1	SEIN	Char	12	288	Standardized State Employer ID Number
22	STATE	Char	2	327	FIPS State SS
20	UINAICS	Char	6	315	Modal NAICS Code NNNNNN
21	UINAICS_EMP	Char	6	321	NAICS Code Employ Weight
13	UISIC	Char	4	300	Modal SIC Code SSSS
15	UISIC_2	Char	2	305	SIC Code SS Estab Weight
14	UISIC_DIV	Char	1	304	SIC Division Estab Weight
16	UISIC_EMP	Char	4	307	SIC Code SSSS EMPLOY Weight
18	UISIC_EMP_2	Char	2	312	SIC Code SS EMPLOY Weight
17	UISIC_EMP_DIV	Char	1	311	SIC Division EMPLOY Weight
48	UNIFORM1	Num	8	248	Draw from Uni Dist
4	YEAR	Num	3	344	Year YYYY
43	county_emp_flag	Num	8	208	
37	county_emp_miss1	Num	8	160	
44	county_emp_miss2	Num	8	216	
33	county_flag	Num	8	128	
28	county_miss1	Num	8	88	
34	county_miss2	Num	8	136	
45	ein_flag	Num	8	224	
38	ein_miss1	Num	8	168	
46	ein_miss2	Num	8	232	
8	in_202	Num	8	32	
7	in_UI	Num	8	24	
3	multi_unit	Num	8	8	SEIN w/2+ records on 202
47	num_sein_min	Num	8	240	
10	sein_best_emp1	Num	8	48	Month 1, Employment
11	sein_best_emp2	Num	8	56	Month 2, Employment
12	sein_best_emp3	Num	8	64	Month 3, Employment
9	sein_best_wages	Num	8	40	Payroll
19	sic_division	Char	1	314	SIC Division
6	source	Num	8	16	1=UI only,2=202 only,3=both
41	uinaics_emp_flag	Num	8	192	

(cont.)

——Alphabetic List of Variables and Attributes——

#	Variable	Type	Len	Pos	Label
36	uinaics_emp_miss1	Num	8	152	
42	uinaics_emp_miss2	Num	8	200	
31	uinaics_flag	Num	8	112	
27	uinaics_miss1	Num	8	80	
32	uinaics_miss2	Num	8	120	
39	uisic_emp_flag	Num	8	176	
35	uisic_emp_miss1	Num	8	144	
40	uisic_emp_miss2	Num	8	184	
29	uisic_flag	Num	8	96	
26	uisic_miss1	Num	8	72	
30	uisic_miss2	Num	8	104	

——Alphabetic List of Indexes and Attributes——

#	Index	# ofUniqueValues	Variables
1	ein_year_quarter	11812329	EIN YEAR QUARTER
2	sein_year_quarter	12041555	SEIN YEAR QUARTER

——Sort Information——

Sortedby:	SEIN YEAR QUARTER
Validated:	NO
Character Set:	ASCII

Chapter 6

Worker and Job Flow Analysis

6.1 Overview

The statistics calculated in this section are based on definitions summarized in Abowd, Corbel & Kramarz (1999) and Davis & Haltiwanger (1999). Employment is measured at two points in time (beginning and end of quarter) and according to two concepts (any employment status and full-quarter employment status). Worker flows are captured by accessions and separations with respect to both employment status concepts. Job flows are captured by gross job creation and destruction at the firm level, again according to both employment concepts. Accessions are further separated into new hires and recalls. Earnings and earnings change statistics are calculated for each of the worker flow categories as well as for both employment statuses.

6.2 Calculation of statistics

The worker and employment flow statistics reported at the county and SIC division level are calculated through a multi-step process.[1] The EHF (see Chapter 4), which contains individual work and earnings histories, is combined with information from the ICF (see Chapter 3) to incorporate demographic characteristics of workers such as age and sex. For each worker in each year and quarter, an array of jobs at various SEINs is stored. The statistics listed in Chapter 7 on page 114 are computed, when appropriate, for each individual/job/quarter combination. The statistics are then aggregated to the SEIN level by age and sex to create a file of totals for each SEIN/year/quarter/agegroup/sexgroup combination. Both the Workforce Investment Act (WIA) and CPS age groups are used. The totals are stored by age/sex group as well as further aggregated within SEIN over age and sex group to produce the overall total for the SEIN as well as marginal totals for sex and age (for example, the total for females of all ages). All totals are then aggregated twice more: once to the industry level and once to the county level. At this point the statistics are in their final form except for the handling of disclosure issues, as discussed below.

6.3 Examples

The following tables provide an example of how the flow statistics are computed for four hypothetical individuals who work at three hypothetical employers over a two year sample period. All individuals and firms in this example are fictitious. Table 6.1 on the following page summarizes the earnings history of each individual as it would appear in the employment history file. Table 6.2 on page 105 presents the individual level employment flow statistics that can be computed from the individual work histories. Note that individual 1 leaves employer *X* at some point during the second quarter of 1995, and that she begins working for employer *Y* during the same quarter. In Table 6.2, employment flow statistics as defined in Chapter 7 have been computed for every quarter of every job worked by Person *1*. Person *1* is considered to be employed at employer *X* from 1994:1 – 1995:2. Hence, *e=1* from 1994:1 through 1995:1 since she is still employed at *X* at the end of each of these quarters. Similarly, *b=1* from 1994:2 through 1995:2 since she

[1] Details on the program sequence used to create the job flow statistics are available in AppendixK on page 184.

is employed at *X* from the very beginning of these quarters. Note that *b* is missing in 1994:1. The first quarter of the analysis is out-of-scope for *b*, since it depends on employment information from the previous quarter. Also note that for in-scope periods, end-of-quarter employment at time *t* is equal to beginning-of quarter employment at time *t + 1*. In Chapter 7, this identity (Identity 1) is defined for aggregates, but as shown in the example it holds at the individual level as well.

			Earnings			
PIK	SEIN	Year	Q1	Q2	Q3	Q4
1	X	1994	4500	4500	4800	4800
1	X	1995	5000	3500		
1	Y	1995		2000	6500	6900
2	Y	1994	1800	1800	1800	1800
2	Y	1995	2000			
2	Z	1995			2500	3000
3	Z	1994	5500	5500	5500	5500
3	Z	1995	6000	6000	6000	6000
4	X	1994	3700	3700	3800	3800
4	X	1995	4000		4200	4300

Table 6.1: Example of individual earnings histories, EHF

Moving on, *f=1* for Person *1*/Employer *X* from 1994:2-1995:1, but *f* is missing during 1994:1, which is out-of-scope, and *f=0* during 1995:2 because she is no longer employed at *X* in 1995:3. In 1995:2 *s=1* and *fs=1* for Person *1*/ Employer *X* because she separates from Employer *X* sometime during this quarter and appears to have been in this job for the entire preceding quarter (1995:1). In 1995:2, *a=1* for Person *1* and Employer *Y* because she enters a relationship with Employer *Y* sometime during this quarter, and *fa=1* in 1995:3 because this is her first full quarter at Employer *Y*. New hires, *h*, is also 1 because she has no previous relationship with Employer *Y* in the last four quarters, and recalls *r=0* for the same reason. A variety of wage measures are also calculated for each individual: *w1* is simply the wage earned at each job each quarter, while measures such as *w2*, *w3*, *wa* are calculated as an individual's wage if he or she meets a certain criteria (*e=1* for *w2*, *f=1* for *w3*, *etc.*).

In Table 6.3 on page 106, the individual statistics are aggregated to the employer level by summing individual statistics by SEIN. *E* for Employer *X* in 95:1, then, is the sum of *e* over all individuals working at *X* in 1995:1 (in this case individuals 1 and 4). Since *e=1* for Individual *1*, who remains with Employer *X* the next quarter, and *e=0* for Individual *4*, who has no wage record with Employer *X* the next quarter, *E=1*. Similarly, since *a=0* for both individuals this quarter (both worked at *X* last quarter also), *A=0*. The job flow at Employer *X*, defined as the net increase in employment over that quarter, is calculated as the difference between the number of end-of-quarter jobs held and the number of beginning-of quarter jobs held. Thus, $JF = E - -B$, or 1 – 2 = -1 in this case. Because there was a negative net job flow of 1 this quarter, job creation *JC= 0* and job destruction *JD=1*. Total payroll *W1* is also computed for each employer; for Employer *X* in 1995:1 it is simply the sum of the wages paid to individuals 1 and 4: \$5000 + \$4000 = \$9000. Individual 1 also had end-of-quarter wages *w2=5000* because she was end-of-quarter employed at *X* this period. For Individual *4*, *w2=0* because *e=0* at *X* in 1995:1. Total end of quarter wages *W2* for Employer *X* in 1995:1 is then calculated as the sum of wages at all end-of-quarter jobs. In this case, it is simply \$5000 since Individual 1 has the only end-of-quarter job at *X* in 1995:1.

Several identities from Chapter 7 are illustrated in Table 6.3. Once again Identity 1 ($B_{jt} = E_{jt-1}$) is noticeable just from glancing at the columns of numbers B and E. Identity 3, $E_{jt} = B_{jt} + A_{jt} - S_{jt}$ also holds whenever all four variables are in-scope. For example, for Employer *X* in 1995:1, *E = 1 = 2 + 0 – 1*. For this employer in 1995:2, *E = 0 = 1 + 0 – 1*. Identity 4, $JF_{jt} = JC_{jt} - JD_{jt}$ is also true: for *X* in 1995: 1 *JF = -1 = 0 – 1*. Identity 5, $E_{jt} = B_{jt} + JC_{jt} - JD_{jt}$, (*X* in 1995:1 : *E = 1 = 2 + 0 – 1*) and Identity 6, $A_{jt} - S_{jt} = JC_{jt} - JD_{jt}$, (*X* in 1995: 1 : *A – S = 0 – 1 = 0 – 1 = JC – JD*). Finally, Identity 15, the total payroll identity ($W_{1jt} = W_{2jt} + WS_{jt}$) is met in

Table 6.2: Employment flow statistics at the individual level

PIK	SEIN	YR:QTR	b	e	f	a	h	r	s	fa	fs	$w1$	$w2$	$w3$	wa	dwa	na	nh	nr	ws	dws	ns
1	X	94:1	.	1	.	.	.	.	0	.	.	4500	4500	.	.	.	.	.	.	.	.	.
1	X	94:2	1	1	1	0	.	.	0	.	.	4500	4500	4500	.	.	.	.	.	.	.	.
1	X	94:3	1	1	1	0	.	.	0	0	0	4800	4800	4800	.	.	.	.	.	.	.	.
1	X	94:4	1	1	1	0	.	.	0	0	0	4800	4800	4800	.	.	.	.	.	.	.	.
1	X	95:1	1	1	1	0	0	0	0	0	0	5000	5000	5000	.	.	.	.	.	.	.	.
1	X	95:2	1	0	0	0	0	0	1	0	1	3500	.	.	.	.	.	.	.	3500	−1500	0
1	Y	95:2	0	1	0	1	1	0	0	0	0	2000	2000	.	2000	−1500	0	0	.	.	.	.
1	Y	95:3	1	1	1	0	0	0	0	1	0	6500	6500	6500	.	.	.	.	.	.	.	.
1	Y	95:4	1	.	.	0	0	0	.	.	.	6900	.	.	.	.	.	.	.	.	.	.
2	Y	94:1	.	1	.	.	.	.	0	.	.	1800	1800	.	.	.	.	.	.	.	.	.
2	Y	94:2	1	1	1	0	.	.	0	.	.	1800	1800	1800	.	.	.	.	.	.	.	.
2	Y	94:3	1	1	1	0	.	.	0	0	0	1800	1800	1800	.	.	.	.	.	.	.	.
2	Y	94:4	1	1	1	0	.	.	0	0	0	1800	1800	1800	.	.	.	.	.	.	.	.
2	Y	95:1	1	0	0	0	0	0	1	0	1	2000	0	.	.	.	.	.	.	2000	200	1
2	Z	95:3	0	1	0	1	1	0	0	0	0	2500	2500	.	2500	500	1	1	.	.	.	.
2	Z	95:4	1	.	.	0	0	0	.	.	.	3000	.	.	.	.	.	.	.	.	.	.
3	Z	94:1	.	1	.	.	.	.	0	.	.	5500	5500	.	.	.	.	.	.	.	.	.
3	Z	94:2	1	1	1	0	.	.	0	.	.	5500	5500	5500	.	.	.	.	.	.	.	.
3	Z	94:3	1	1	1	0	.	.	0	0	0	5500	5500	5500	.	.	.	.	.	.	.	.
3	Z	94:4	1	1	1	0	.	.	0	0	0	5500	5500	5500	.	.	.	.	.	.	.	.
3	Z	95:1	1	1	1	0	0	0	0	0	0	6000	6000	6000	.	.	.	.	.	.	.	.
3	Z	95:2	1	1	1	0	0	0	0	0	0	6000	6000	6000	.	.	.	.	.	.	.	.
3	Z	95:3	1	1	1	0	0	0	0	0	0	6000	6000	6000	.	.	.	.	.	.	.	.
3	Z	95:4	1	.	.	0	0	0	.	.	.	6000	.	.	.	.	.	.	.	.	.	.
4	X	94:1	.	1	.	.	.	.	0	.	.	3700	3700	.	.	.	.	.	.	.	.	.
4	X	94:2	1	1	1	0	.	.	0	.	.	3700	3700	3700	.	.	.	.	.	.	.	.
4	X	94:3	1	1	1	0	.	.	0	0	0	3800	3800	3800	.	.	.	.	.	.	.	.
4	X	94:4	1	1	1	0	.	.	0	0	0	3800	3800	3800	.	.	.	.	.	.	.	.
4	X	95:1	1	0	0	0	0	0	1	0	1	4000	0	.	.	.	.	.	.	4000	200	1
4	X	95:3	0	1	0	1	0	1	0	0	0	4200	4200	.	4200	200	1	.	1	.	.	.
4	X	95:4	1	.	.	0	0	0	.	.	.	4300	.	.	.	.	.	.	.	.	.	.

Table 6.3: Employment flow statistics at the SEIN level

SEIN	YR:QTR	B	E	F	A	H	R	S	FA	FS	JF	JC	JD	FJF	FJC	FJD	$W1$	$W2$	$W3$	WA	dWA	NA	NH	NR	WS	dWS	NS
X	94:1	.	2	.	.	.	.	0	.	.	.	.	.	.	.	.	8200	8200	.	.	.	.	.	.	.	.	.
X	94:2	2	2	2	0	.	.	0	.	.	0	0	0	.	.	.	8200	8200	8200	.	.	.	.	.	.	.	.
X	94:3	2	2	2	0	.	.	0	0	0	0	0	0	0	0	0	8600	8600	8600	.	.	.	.	.	.	.	.
X	94:4	2	2	2	0	.	.	0	0	0	0	0	0	0	0	0	8600	8600	8600	.	.	.	.	.	.	.	.
X	95:1	2	1	1	0	0	0	1	0	1	−1	0	1	−1	0	1	9000	5000	5000	.	.	.	.	.	4000	200	1
X	95:2	1	0	0	0	0	0	1	0	1	−1	0	1	−1	0	1	3500	.	.	.	.	.	.	.	3500	−1500	0
X	95:3	0	1	0	1	0	1	0	0	0	1	1	0	0	0	0	4200	4200	.	4200	200	1	.	1	.	.	.
X	95:4	1	.	.	0	0	0	.	.	.	.	.	.	.	.	.	4300	.	.	.	.	0	.	.	.	.	.
Y	94:1	.	1	.	.	.	.	0	.	.	.	.	.	.	.	.	1800	1800	.	.	.	.	.	.	.	.	.
Y	94:2	1	1	1	0	.	.	0	.	.	0	0	0	.	.	.	1800	1800	1800	.	.	.	.	.	.	.	.
Y	94:3	1	1	1	0	.	.	0	0	0	0	0	0	0	0	0	1800	1800	1800	.	.	.	.	.	.	.	.
Y	94:4	1	1	1	0	.	.	0	0	0	0	0	0	0	0	0	1800	1800	1800	.	.	.	.	.	.	.	.
Y	95:1	1	0	0	0	0	0	1	0	1	−1	0	1	−1	0	1	2000	0	.	.	.	.	.	.	2000	200	1
Y	95:2	0	1	0	1	1	0	0	0	0	1	1	0	0	0	0	2000	2000	.	2000	−1500	0	0	.	.	.	.
Y	95:3	1	1	1	0	0	0	0	1	0	0	0	0	1	1	0	6500	6500	6500	.	.	.	.	.	.	.	.
Y	95:4	1	.	.	0	0	0	.	.	.	.	.	.	.	.	.	6900	.	.	.	.	.	.	.	.	.	.
Z	94:1	.	1	.	.	.	.	0	.	.	.	.	.	.	.	.	5500	5500	.	.	.	.	.	.	.	.	.
Z	94:2	1	1	1	0	.	.	0	.	.	0	0	0	.	.	.	5500	5500	5500	.	.	.	.	.	.	.	.
Z	94:3	1	1	1	0	.	.	0	0	0	0	0	0	0	0	0	5500	5500	5500	.	.	.	.	.	.	.	.
Z	94:4	1	1	1	0	.	.	0	0	0	0	0	0	0	0	0	5500	5500	5500	.	.	.	.	.	.	.	.
Z	95:1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6000	6000	6000	.	.	.	.	.	.	.	.
Z	95:2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6000	6000	6000	.	.	.	.	.	.	.	.
Z	95:3	1	2	1	1	1	0	0	0	0	1	1	0	0	0	0	8500	8500	6000	2500	500	1	1	.	.	.	.
Z	95:4	2	.	.	0	0	0	.	.	.	.	.	.	.	.	.	9000	.	.	.	.	.	.	.	.	.	.

all cases. For example, for SEIN *X* in 1995: 2, *W1 = $9000 = 5000 + 4000 = W2 + WS*. When *WS is missing*, as in most cases, *W1* and *W2* are simply equal because every wage is an end-of-quarter wage.

Table 6.4: Employment flow statistics aggregated to form county totals

YR:QTR	*B*	*E*	*F*	*A*	*H*	*R*	*S*	*FA*	*FS*	*JF*	*JC*	*JD*	*FJF*	*FJC*	*FJD*	*W1*	*Z_W2*	*Z_W3*	*Z_WA*	*Z_dWA*	*Z_NA*	*NH*	*Z_NR*	*Z_dWS*	*Z_NS*
94:1	0	4	0	0	0	0	0	0	0	.	.	.	.	.	.	15500	3875	.	.	.	.	.	.	.	.
94:2	4	4	4	0	0	0	0	0	0	0	0	0	.	.	.	15500	3875	3875	.	.	.	.	.	.	.
94:3	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	15900	3975	3975	.	.	.	.	.	.	.
94:4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	15900	3975	3975	.	.	.	.	.	.	.
95:1	4	2	2	0	0	0	2	0	2	−2	0	2	−2	0	2	17000	5500	5500	.	.	.	.	.	3000	200
95:2	2	2	1	1	1	0	1	0	1	0	1	1	−1	0	1	11500	4000	6000	2000	−1500	0	0	.	3500	−1500
95:3	2	4	2	2	1	1	0	1	0	2	2	0	1	1	0	19200	4800	6250	3350	350	1	1	1	.	.
95:4	4	0	0	0	0	0	0	0	0	.	.	.	.	.	.	20200	.	.	.	.	.	.	.	.	.

In Table 6.4, the SEIN-level statistics are aggregated in a similar way to create total flows and average wages. These can be thought of as county totals if the hypothetical universe includes just a single county. The total flows are computed exactly as the employer level flows in Table 6.3. For 1995:1, total jobs at the end of quarter, total *E*, is just the sum of *E* for *X*, *Y*, and *Z*: 1 + 0 + 1 = 2. Note that this is the same as the sum of all individual *e* in Table 6.2 for 1995:1. Total accessions are computed similarly (*A = 0 + 0 + 0*) as are total wages (*W1 = 9000 + 2000 + 6000 = 17000*). Average wages (for example, *Z_W2*, *Z_WA*) are computed by summing total wages for *X*, *Y*, and *Z*, and dividing by the total number of individuals used to calculate the particular wage measure. For example, *Z_W2* for 1995: 1 is computed as the sum of *W2* for *X*, *Y*, and *Z* where defined (5000 + 6000) divided by the total number of end-of-quarter positions (*E = 2*) for an average end-of-quarter wage of *Z_W2* = $5500. *Z_WA* is undefined for this quarter because there are no accessions this quarter. In 1995:2 they are computed as the sum of *WA* for *X*, *Y*, and *Z* where defined (2000, since *WA* is only defined for *Y* this quarter) divided by the total number of accessions this quarter (1) so the average wage to accessions in 1995:2 is simply $2000.

6.4 Data Consistency

The plots on the following pages show the consistency of beginning-of-quarter employment totals based on the LEHD processing with the BLS data from the Covered Worker series (CEW). The difference in overall levels reflects systematic differences in the assumptions of the EDE system and the BLS CEW system. Single-quarter discrepancies reflect data difficulties with the unemployment insurance wage records in the historical databases. We are investigating these discrepancies further.

Figure 6.1: Data consistency: California

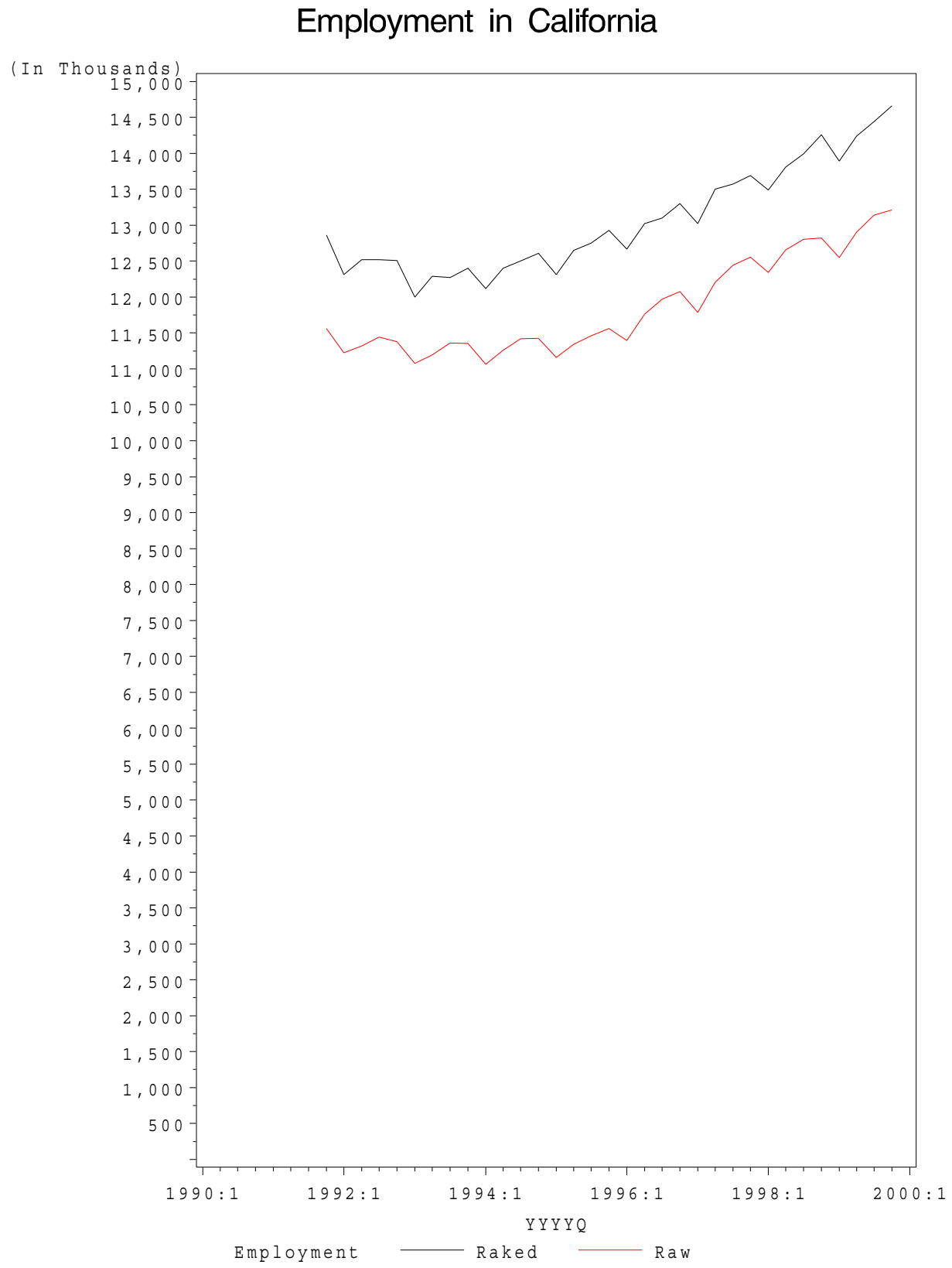


Figure 6.2: Data consistency: Florida

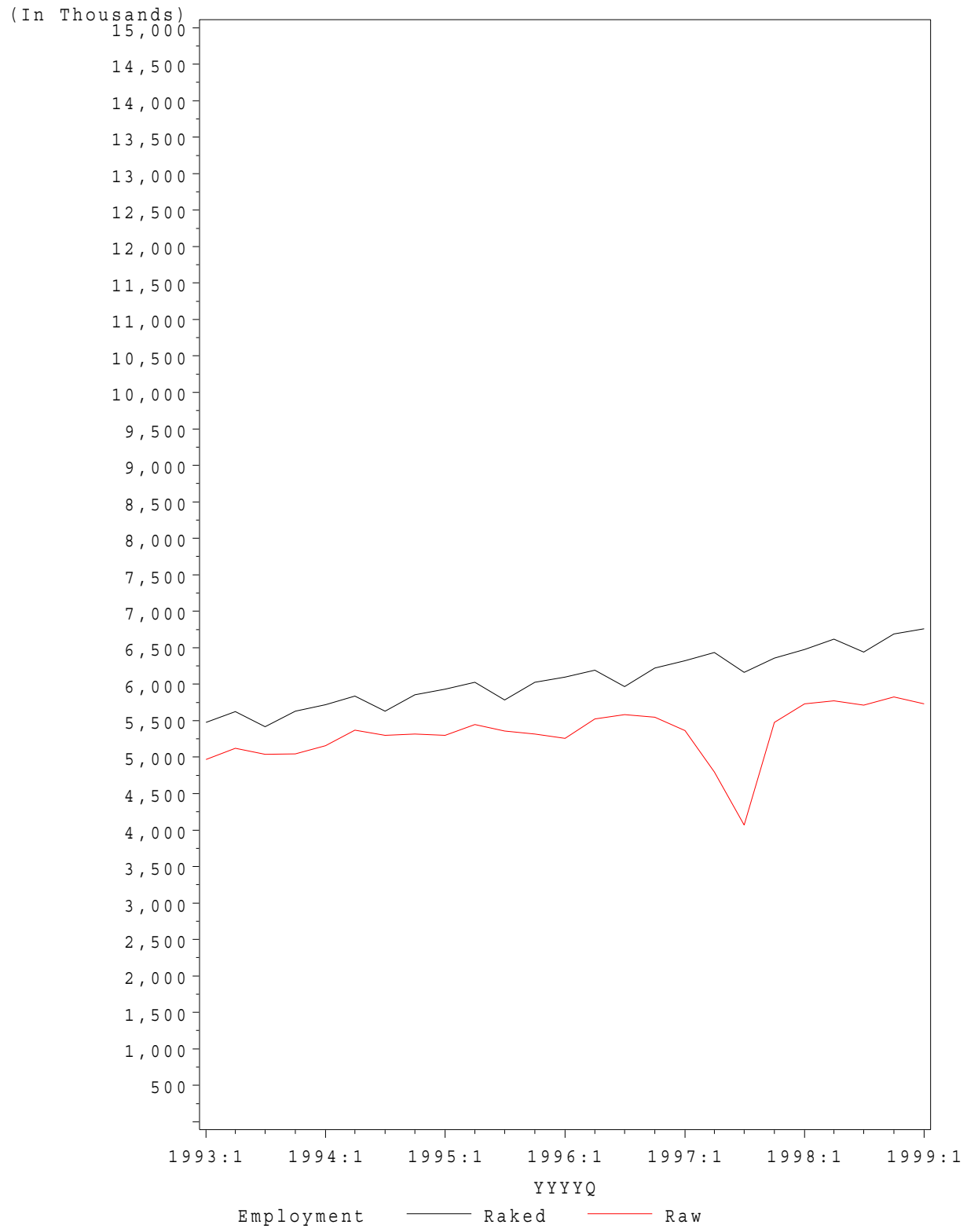


Figure 6.3: Data consistency: Illinois

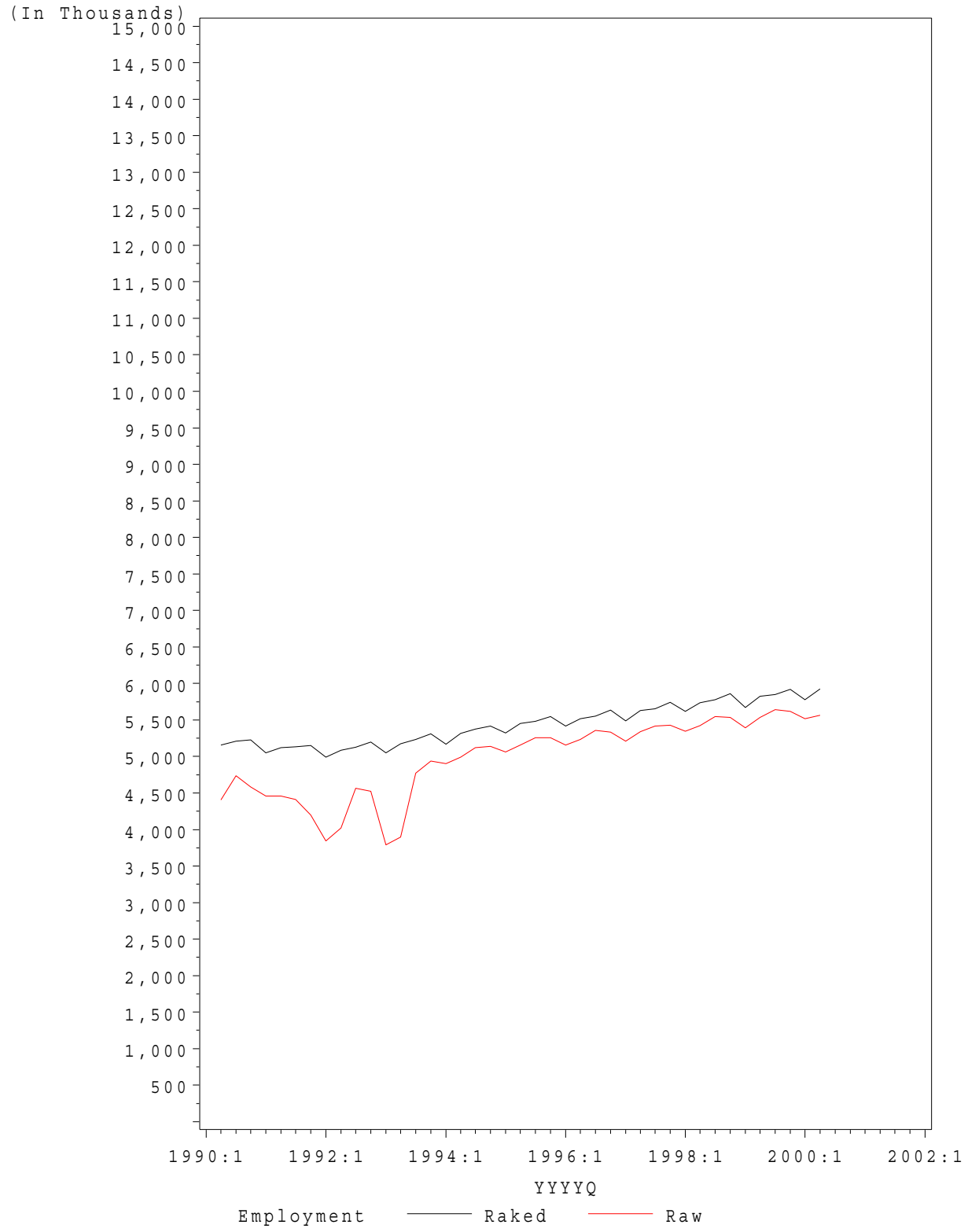


Figure 6.4: Data consistency: Maryland

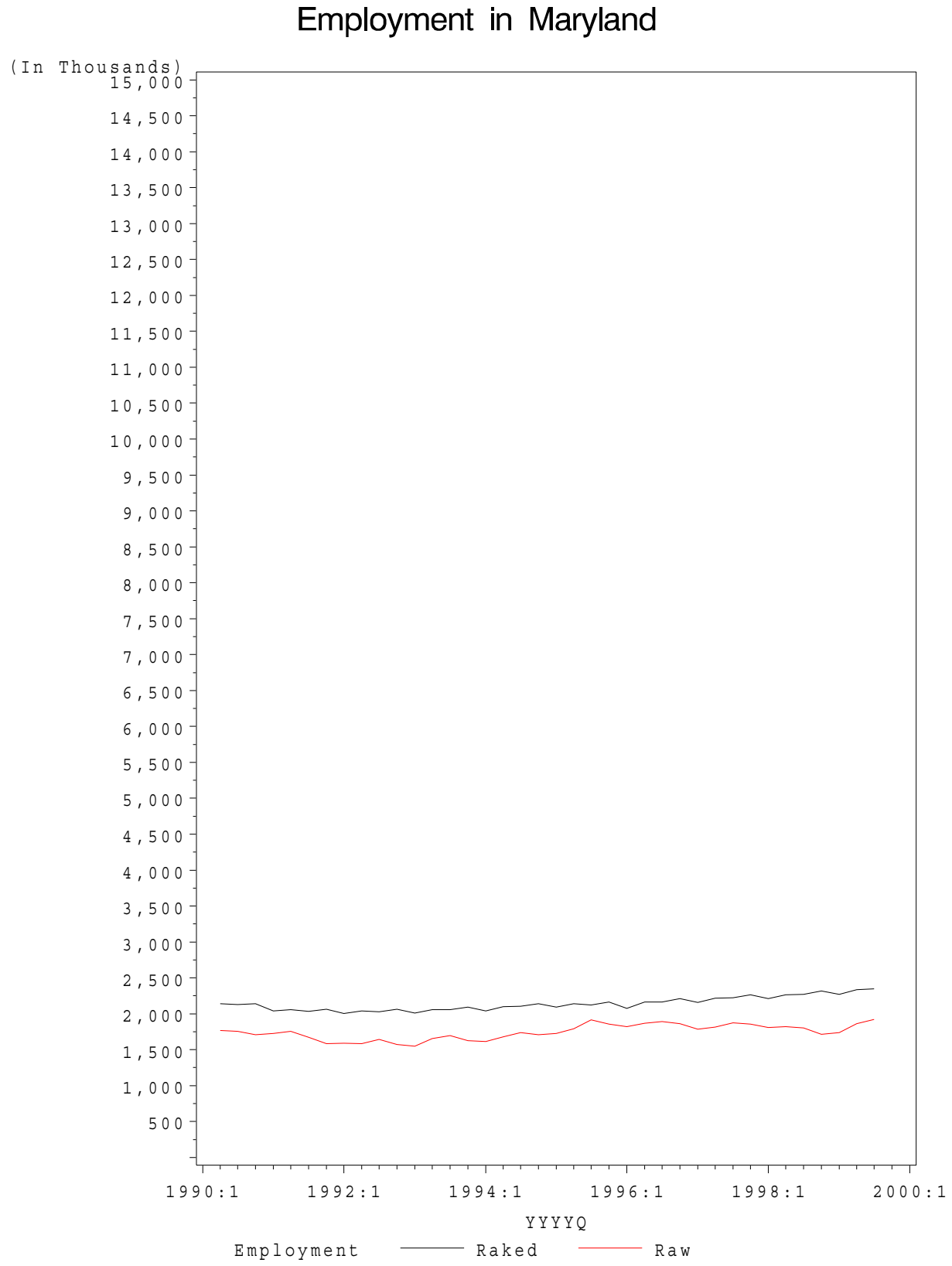


Figure 6.5: Data consistency: Minnesota

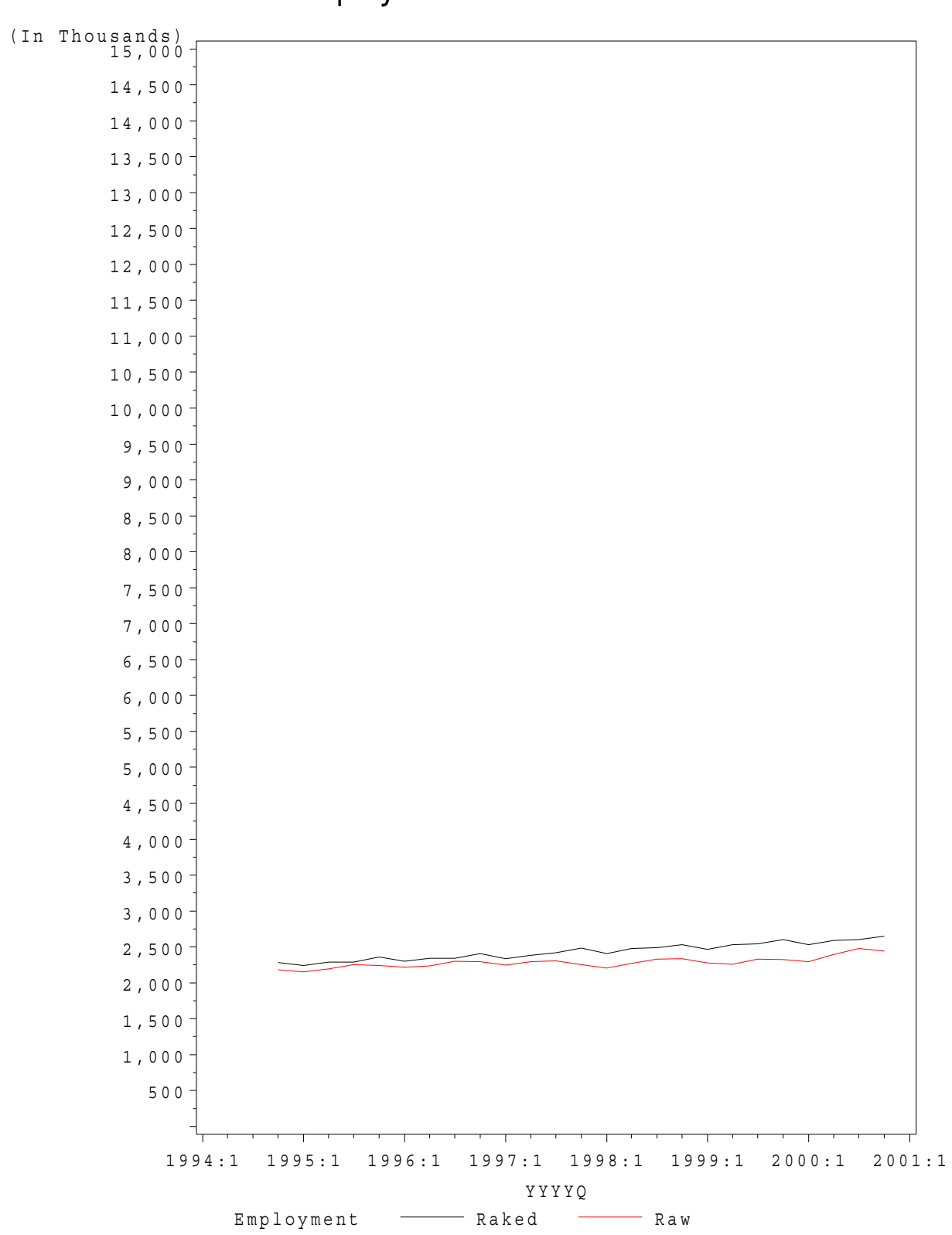
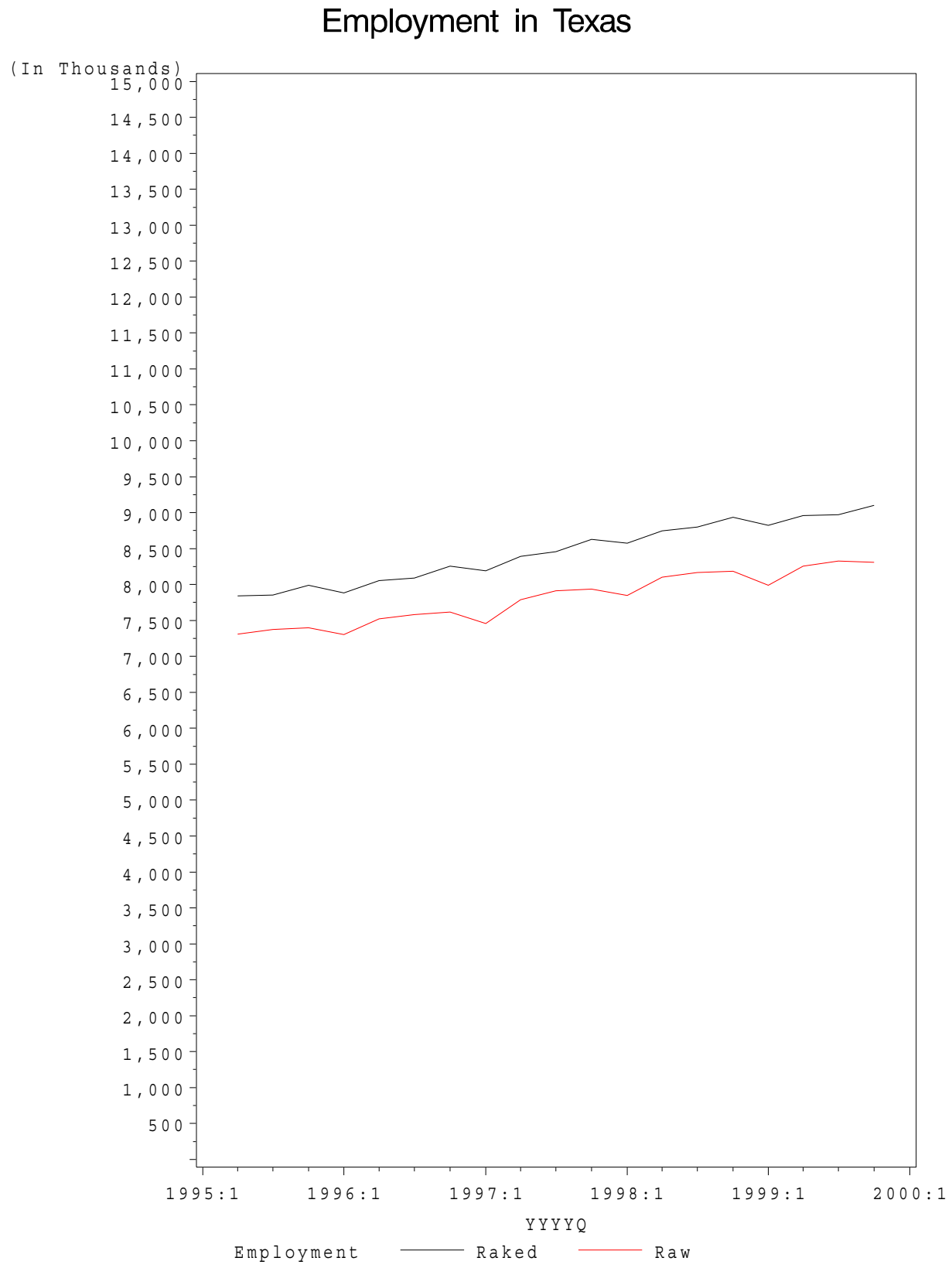


Figure 6.6: Data consistency: Texas



Chapter 7

Definitions of Job Flow, Worker Flow, and Earnings Statistics

7.1 Overview and basic data processing conventions

For internal processing the variable t refers to the sequential quarter. The variable t runs from $qmin$ to $qmax$, regardless of the state being processed. The quarters are numbered sequentially from 1 (1985:1) to the latest available quarter. These values are $qmin = 1$ (1985:1) and $qmax = 64$ (2000:4), as of January 17, 2002. For publication, presentation, and internal data files, all dates are presented as (year:quarter) pairs, *e.g.* (1990:1) for first quarter 1990. The variable $qfirst$ refers to the first available sequential quarter of data for a state (*e.g.*, $qfirst = 21$ for Illinois). The variable $qlast$ refers to the last available sequential quarter of data for a state (*e.g.*, $qlast = 62$ for Illinois). Unless otherwise specified a variable is defined for $qfirst \leq t \leq qlast$. Statistics are produced for both sexes combined, as well as separately, for all age groups, ages 14-18, 19-21, 22-24, 25-34, 35-44, 45-54, 55-64, 65+. An individual's age is measured as of the last day of the quarter.

7.2 Individual concepts

Flow employment (m): for $qfirst \leq t \leq qlast$, individual i employed (matched to a job) at some time during period t at employer j

$$m_{ijt} = \begin{cases} 1, \text{ if } i \text{ has positive earnings at employer } j \text{ during quarter } t \\ 0, \text{ otherwise.} \end{cases} \tag{7.1}$$

Beginning of quarter employment (b): For $qfirst < t$, individual i employed at the end of $t-1$, beginning of t

$$b_{ijt} = \begin{cases} 1, \text{ if } m_{ijt-1} = m_{ijt} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.2}$$

End of quarter employment (e): For $t < qlast$, individual i employed at j at the end of t, beginning of $t+1$

$$e_{ijt} = \begin{cases} 1, \text{ if } m_{ijt} = m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.3}$$

Accessions (a_1): For $qfirst < t$, individual i acceded to j during t

$$a_{1ijt} = \begin{cases} 1, \text{ if } m_{ijt-1} = 0 \ \& \ m_{ijt} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.4}$$

Separations (s_1): For $t < qlast$, individual i separated from j during t

$$s_{1ijt} = \begin{cases} 1, \text{ if } m_{ijt} = 1 \ \& \ m_{ijt+1} = 0 \\ 0, \text{ otherwise.} \end{cases} \tag{7.5}$$

Full quarter employment (f): For $qfirst < t < qlast$, individual i was employed at j at the beginning and end of quarter t (full-quarter job)

$$f_{ijt} = \begin{cases} 1, \text{ if } m_{ijt-1} = 1 \ \& \ m_{ijt} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.6}$$

New hires (h_1): For $qfirst + 3 < t$, individual i was newly hired at j during period t

$$h_{1ijt} = \begin{cases} 1, \text{ if } m_{ijt-4} = 0 \ \& \ m_{ijt-3} = 0 \ \& \ m_{ijt-2} = 0 \ \& \ m_{ijt-1} = 0 \ \& \ m_{ijt} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.7}$$

Recalls (r_1): For $qfirst + 3 < t$, individual$i$ was recalled from layoff at j during period t

$$r_{1ijt} = \begin{cases} 1, \text{ if } m_{ijt-1} = 0 \ \& \ m_{ijt} = 1 \ \& \ h_{ijt} = 0 \\ 0, \text{ otherwise.} \end{cases} \tag{7.8}$$

Accessions to consecutive quarter status (a_2): For $qfirst < t < qlast$, individual i transited from accession to consecutive-quarter status at j at the start of $t + 1$ (accession in t and still employed at the end of the quarter)

$$a_{2ijt} = \begin{cases} 1, \text{ if } a_{1ijt} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.9}$$

Accessions to full quarter status (a_3): For $qfirst + 1 < t < qlast$, individual i transited from consecutive-quarter to full-quarter status at j at the start of $t + 1$ (accession in $t - 1$ and employed for the full quarter in t)

$$a_{3ijt} = \begin{cases} 1, \text{ if } a_{2ijt-1} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.10}$$

New hires to consecutive quarter status (h_2): For $qfirst + 3 < t < qlast$, individual i transited from newly hired to consecutive-quarter hired status at j at the start of $t + 1$ (hired in t and still employed at the end of the quarter)

$$h_{2ijt} = \begin{cases} 1, \text{ if } h_{1ijt} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.11}$$

New hires to full quarter status (a_3): For $qfirst + 4 < t < qlast$, individual i transited from consecutive-quarter hired to full-quarter hired status at j at the start of $t + 1$ (hired in $t - 1$ and full-quarter employed in t)

$$h_{3ijt} = \begin{cases} 1, \text{ if } h_{2ijt-1} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.12}$$

Recalls to consecutive quarter status (r_2): For $qfirst + 3 < t < qlast$, individual i transited from recalled to consecutive-quarter recalled status at j at the start of $t + 1$ (recalled in t and still employed at the end of the quarter)

$$r_{2ijt} = \begin{cases} 1, \text{ if } r_{1ijt} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.13}$$

Recalls to full quarter status (r_3): For $qfirst + 4 < t < qlast$, individual i transited from consecutive-quarter recalled to full-quarter recalled status at j at the start of $t+1$ (recalled in $t-1$ and full-quarter employed in t)

$$r_{3ijt} = \begin{cases} 1, \text{ if } r_{2ijt-1} = 1 \ \& \ m_{ijt+1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.14}$$

Separations from consecutive quarter status (s_2): For $qfirst < t < qlast$, individual i separated from j during t with consecutive-quarter status at the start of t

$$s_{2ijt} = \begin{cases} 1, \text{ if } s_{1ijt} = 1 \ \& \ m_{ijt-1} = 1 \\ 0, \text{ otherwise.} \end{cases} \tag{7.15}$$

Separations from full-quarter status (s_3): For $qfirst + 1 < t < qlast$, individual i separated from j during t with full-quarter status during $t-1$

$$s_{3ijt} = \begin{cases} 1, \text{ if } s_{2ijt} = 1 \ \ \& \ \ m_{ijt-2} = 1 \\ 0, \text{ otherwise} \end{cases} \tag{7.16}$$

Total earnings during the quarter (w_1): for $qfirst \leq t \leq qlast$, earnings of individual i at employer j during period t

$$w_{1ijt} = \sum \text{all } UI \text{ covered earnings by } i \text{ at } j \text{ during } t \tag{7.17}$$

Earnings of end-of-period employees at employer j during period t

$$w_{2ijt} = \begin{cases} w_{1ijt}, \text{ if } e_{ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.18}$$

Earnings of full-quarter individual i at employer j during period t

$$w_{3ijt} = \begin{cases} w_{1ijt}, \text{ if } f_{ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.19}$$

For $qfirst \leq t \leq qlast$, total earnings of individual i during period t

$$w_{1i\bullet t} = \sum_{j \text{ employs } i \text{ during } t} w_{1ijt} \tag{7.20}$$

Total earnings of end-of-period employees i during period t

$$w_{2i\bullet t} = \begin{cases} w_{1i\bullet t}, \text{ if } e_{ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.21}$$

Total earnings of full-quarter employees i during period t

$$w_{3i\bullet t} = \begin{cases} w_{1i\bullet t}, \text{ if } f_{ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.22}$$

For $qfirst < t$, change in total earnings of individual i between periods $t-1$ and t. The goal is to produce statistics based on:

$$\Delta w_{1i\bullet t} = w_{1i\bullet t} - w_{1i\bullet t-1} \tag{7.23}$$

Earnings of accessions to employer j during period t

$$wa_{1ijt} = \begin{cases} w_{1ijt}, \text{ if } a_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.24}$$

Earnings of consecutive-quarter accessions to employer j during period t

$$wa_{2ijt} = \begin{cases} w_{1ijt}, \text{ if } a_{2ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.25}$$

Earnings of full-quarter accessions to employer j during period t

$$wa_{3ijt} = \begin{cases} w_{1ijt}, \text{ if } a_{3ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.26}$$

Earnings of full-quarter new hires to employer j during period t

$$wh_{3ijt} = \begin{cases} w_{1ijt}, \text{ if } h_{3ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.27}$$

Total earnings change for accessions to employer j during t

$$\Delta wa_{1ijt} = \begin{cases} \Delta w_{1i\bullet t}, \text{ if } a_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.28}$$

Total earnings change for full-quarter accessions to employer j during t

$$\Delta wa_{3ijt} = \begin{cases} \Delta w_{1i\bullet t}, \text{ if } a_{3ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.29}$$

Earnings of separations from employer j during period t

$$ws_{1ijt} = \begin{cases} w_{1ijt}, \text{ if } s_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.30}$$

Earnings of full-quarter separations to employer j during period t

$$ws_{3ijt} = \begin{cases} w_{1ijt}, \text{ if } s_{3ijt+1} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.31}$$

Total earnings change for separations from employer j during t

$$\Delta ws_{1ijt} = \begin{cases} \Delta w_{1i\bullet t+1}, \text{ if } s_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.32}$$

Total earnings change for full-quarter separations from employer j during t

$$\Delta ws_{3ijt} = \begin{cases} \Delta w_{1i\bullet t+1}, \text{ if } s_{3ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.33}$$

Periods of non-employment prior to an accession by i at employer j during t during the previous four quarters (defined for $qfirst + 3 < t$)

$$na_{ijt} = \begin{cases} \sum\limits_{1 \leqslant s \leqslant 4} n_{it-s}, \text{ if } a_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.34}$$

where $n_{it} = 1$ if $m_{ijt} = 0 \; \forall j$.

Periods of non-employment prior to a new hire by i at employer j during t during the previous four quarters

$$nh_{ijt} = \begin{cases} \sum\limits_{1 \leqslant s \leqslant 4} n_{it-s}, \text{ if } h_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.35}$$

Periods of non-employment prior to a recall by i at employer j during t during the previous four quarters

$$nr_{ijt} = \begin{cases} \sum\limits_{1 \leqslant s \leqslant 4} n_{it-s}, \text{ if } r_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.36}$$

Periods of non-employment following a separation by i from employer j during t during the next four quarters, (defined for $t < qlast - 3$)

$$ns_{ijt} = \begin{cases} \sum\limits_{1 \leqslant s \leqslant 4} n_{it+s}, \text{ if } s_{1ijt} = 1 \\ \text{undefined, otherwise} \end{cases} \tag{7.37}$$

7.3 Employer concepts

For statistic x_{cijt} denote the sum over i during period t as $x_{c\cdot jt}$. For example, beginning of period employment for firm j is written as:

$$b_{\cdot jt} = \sum_i b_{ijt} \tag{7.38}$$

All individual statistics generate employer totals according to the formula above. The key employer statistic is the average end-of-period employment growth rate for employer j, the components of which are defined here.

Beginning-of-period employment (number of jobs)

$$B_{jt} = b_{\cdot jt} \tag{7.39}$$

End-of-period employment (number of jobs)

$$E_{jt} = e_{\cdot jt} \tag{7.40}$$

Employment any time during the period (number of jobs)

$$M_{jt} = m_{\cdot jt} \tag{7.41}$$

Full-quarter employment

$$F_{jt} = f_{.jt} \tag{7.42}$$

Net job flows (change in employment) for employer j during period t

$$JF_{jt} = E_{jt} - B_{jt} \tag{7.43}$$

Average employment for employer j between periods $t-1$ and t

$$\bar{E}_{jt} = \frac{(B_{jt} + E_{jt})}{2} \tag{7.44}$$

Average employment growth rate for employer j between periods $t-1$ and t

$$G_{jt} = \frac{JF_{jt}}{\bar{E}_{jt}} \tag{7.45}$$

Job creation for employer j between periods $t-1$ and t

$$JC_{jt} = \bar{E}_{jt} \max\left(0, G_{jt}\right) \tag{7.46}$$

Average job creation rate for employer j between periods $t-1$ and t

$$JCR_{jt} = \frac{JC_{jt}}{\bar{E}_{jt}} \tag{7.47}$$

Job destruction for employer j between periods $t-1$ and t

$$JD_{jt} = \bar{E}_{jt} \operatorname{abs}\left(\min\left(0, G_{jt}\right)\right) \tag{7.48}$$

Average job destruction rate for employer j between periods $t-1$ and t

$$JDR_{jt} = \frac{JD_{jt}}{\bar{E}_{jt}} \tag{7.49}$$

Net change in full-quarter employment for employer j during period t

$$FJF_{jt} = F_{jt} - F_{jt-1} \tag{7.50}$$

Average full-quarter employment for employer j during period t

$$\bar{F}_{jt} = \frac{F_{jt-1} + F_{jt}}{2} \tag{7.51}$$

Average full-quarter employment growth rate for employer j between $t-1$ and t

$$FG_{jt} = \frac{FJF_{jt}}{\bar{F}_{jt}} \tag{7.52}$$

Full-quarter job creations for employer j between $t-1$ and t

$$FJC_{jt} = \bar{F}_{jt} \max\left(0, FG_{jt}\right) \tag{7.53}$$

Average full-quarter job creation rate for employer j between $t-1$ and t

$$FJCR_{jt} = FJC_{jt} \,/\, \bar{F}_{jt} \tag{7.54}$$

Full-quarter job destruction for employer j between $t-1$ and t

$$FJD_{jt} = \bar{F}_{jt} abs\left(\min\left(0, FG_{jt}\right)\right) \tag{7.55}$$

Average full-quarter job destruction rate for employer j between $t-1$ and t

$$FJDR_{jt} = FJD_{jt} \Big/ \bar{F}_{jt} \tag{7.56}$$

Accessions for employer j during t

$$A_{jt} = a_{1 \cdot jt} \tag{7.57}$$

Average accession rate for employer j during t

$$AR_{jt} = A_{jt} \Big/ \bar{E}_{jt} \tag{7.58}$$

Separations for employer j during t

$$S_{jt} = s_{1 \cdot jt} \tag{7.59}$$

Average separation rate for employer j during t

$$SR_{jt} = S_{jt} \Big/ \bar{E}_{jt} \tag{7.60}$$

New hires for employer j during t

$$H_{jt} = h_{1 \cdot jt} \tag{7.61}$$

Full Quarter New hires for employer j during t

$$H_{3jt} = h_{3 \cdot jt} \tag{7.62}$$

Recalls for employer j during t

$$R_{jt} = r_{1 \cdot jt} \tag{7.63}$$

Flow into full-quarter employment for employer j during t

$$FA_{jt} = a_{3 \cdot jt} \tag{7.64}$$

New hires into full-quarter employment for employer j during t

$$FH_{jt} = h_{3 \cdot jt} \tag{7.65}$$

Average rate of flow into full-quarter employment for employer j during t

$$FAR_{jt} = FA_{jt} \Big/ \bar{F}_{jt} \tag{7.66}$$

Flow out of full-quarter employment for employer j during t

$$FS_{jt} = s_{3 \cdot jt} \tag{7.67}$$

Average rate of flow out of full-quarter employment for employer j during t

$$FSR_{jt} = FS_{jt} \Big/ \bar{F}_{jt} \tag{7.68}$$

Flow into consecutive quarter employment for employer j during t

$$CA_{jt} = a_{2 \cdot jt} \tag{7.69}$$

Flow out of consecutive quarter employment for employer j during t

$$CS_{jt} = s_{2 \cdot jt} \tag{7.70}$$

Total payroll of all employees

$$W_{1jt} = w_{1 \cdot jt} \tag{7.71}$$

Total payroll of end-of-period employees

$$W_{2jt} = w_{2 \cdot jt} \tag{7.72}$$

Total payroll of full-quarter employees

$$W_{3jt} = w_{3 \cdot jt} \tag{7.73}$$

Total payroll of accessions

$$WA_{jt} = wa_{1 \cdot jt} \tag{7.74}$$

Change in total earnings for accessions

$$\Delta WA_{jt} = \sum_{i \in \{J(i,t)=j\}} \triangle wa_{1ijt} \tag{7.75}$$

Total payroll of transits to consecutive-quarter status

$$WCA_{jt} = wa_{2 \cdot jt} \tag{7.76}$$

Total payroll of transits to full-quarter status

$$WFA_{jt} = wa_{3 \cdot jt} \tag{7.77}$$

Total payroll of new hires to full-quarter status

$$WFH_{jt} = wh_{3 \cdot jt} \tag{7.78}$$

Change in total earnings for transits to full-quarter status

$$\Delta WFA_{jt} = \sum_{i \in \{J(i,t)=j\}} \Delta wa_{3ijt} \tag{7.79}$$

Total periods of non-employment for accessions

$$NA_{jt} = na_{\cdot jt} \tag{7.80}$$

Total periods of non-employment for new hires (last four quarters)

$$NH_{jt} = nh_{\cdot jt} \tag{7.81}$$

Total periods of non-employment for recalls (last four quarters)

$$NR_{jt} = nr_{.jt} \tag{7.82}$$

Total earnings of separations

$$WS_{jt} = ws_{1.jt} \tag{7.83}$$

Total change in total earnings for separations

$$\Delta WS_{jt} = \sum_{i \in \{J(i,t)=j\}} \Delta ws_{1ijt} \tag{7.84}$$

Total earnings of separations from full-quarter status (most recent full quarter)

$$WFS_{jt} = ws_{3.jt} \tag{7.85}$$

Total change in total earnings for full-quarter separations

$$\Delta WFS_{jt} = \sum_{i \in \{J(i,t)=j\}} \Delta ws_{3ijt} \tag{7.86}$$

Total periods of non-employment for separations

$$NS_{jt} = ns_{.jt} \tag{7.87}$$

Average earnings of end-of-period employees

$$ZW_{2jt} = W_{2jt} \,/\, E_{jt} \tag{7.88}$$

Average earnings of full-quarter employees

$$ZW_{3jt} = W_{3jt} \,/\, F_{jt} \tag{7.89}$$

Average earnings of accessions

$$ZWA_{jt} = WA_{jt} \,/\, A_{jt} \tag{7.90}$$

Average change in total earnings for accessions

$$Z\Delta WA_{jt} = \Delta WA_{jt} \,/\, A_{jt} \tag{7.91}$$

Average earnings of transits to full-quarter status

$$ZWFA_{jt} = WFA_{jt} \,/\, FA_{jt} \tag{7.92}$$

Average earnings of new hires to full-quarter status

$$ZWFH_{jt} = WFH_{jt} \,/\, FH_{jt} \tag{7.93}$$

Average change in total earnings for transits to full-quarter status

$$Z\Delta WFA_{jt} = \Delta WFA_{jt} \,/\, FA_{jt} \tag{7.94}$$

Average periods of non-employment for accessions

$$ZNA_{jt} = NA_{jt} \,/\, A_{jt} \tag{7.95}$$

Average periods of non-employment for new hires (last four quarters)

$$ZNH_{jt} = NH_{jt} \,/\, H_{jt} \tag{7.96}$$

Average periods of non-employment for recalls (last four quarters)

$$ZNR_{jt} = NR_{jt} \,/\, R_{jt} \tag{7.97}$$

Average earnings of separations

$$ZWS_{jt} = WS_{jt} \,/\, S_{jt} \tag{7.98}$$

Average change in total earnings for separations

$$Z\Delta WS_{jt} = \Delta WS_{jt} \,/\, S_{jt} \tag{7.99}$$

Average earnings of separations from full-quarter status (most recent full quarter)

$$ZWFS_{jt-1} = WFS_{jt-1} \,/\, FS_{jt} \tag{7.100}$$

Average change in total earnings for full-quarter separations

$$Z\Delta WFS_{jt} = \Delta WFS_{jt} \,/\, FS_{jt} \tag{7.101}$$

Average periods of non-employment for separations

$$ZNS_{jt} = NS_{jt} \,/\, S_{jt} \tag{7.102}$$

End-of-period employment (number of workers) [Aggregate concept not related to a business]

$$N_t = n_{.t} \tag{7.103}$$

7.4 Identities

Identity 1 Employment at beginning of period t equals end of period $t-1$

$$B_{jt} = E_{jt-1}$$

Identity 2 Evolution of end of period employment

$$E_{jt} = B_{jt} + A_{jt} - S_{jt}$$

Identity 3 Evolution of average employment

$$\bar{E}_{jt} = B_{jt} + (A_{jt} - S_{jt}) \,/\, 2$$

Identity 4 Job flow identity

$$JF_{jt} = JC_{jt} - JD_{jt}$$

Identity 5 Creation-destruction identity

$$E_{jt} = B_{jt} + JC_{jt} - JD_{jt}$$

Identity 6 Creation-destruction/accession-separation identity

$$A_{jt} - S_{jt} = JC_{jt} - JD_{jt}$$

Identity 7 Evolution of full-quarter employment

$$F_{jt} = F_{jt-1} + FA_{jt} - FS_{jt}$$

Identity 8 Full-quarter creation-destruction identity

$$F_{jt} = F_{jt-1} + FJC_{jt} - FJD_{jt}$$

Identity 9 Full-quarter job flow identity

$$FJF_{jt} = FJC_{jt} - FJD_{jt}$$

Identity 10 Full-quarter creation-destruction/accession-separation identity

$$FA_{jt} - FS_{jt} = FJC_{jt} - FJD_{jt}$$

Identity 11 Employment growth rate identity

$$G_{jt} = JCR_{jt} - JDR_{jt}$$

Identity 12 Creation-destruction/accession-separation rate identity

$$JCR_{jt} - JDR_{jt} = AR_{jt} - SR_{jt}$$

Identity 13 Full quarter employment growth rate identity

$$FG_{jt} = FJCR_{jt} - FJDR_{jt}$$

Identity 14 Full quarter creation-destruction/accession-separation rate identity

$$FJCR_{jt} - FJDR_{jt} = FAR_{jt} - FSR_{jt}$$

Identity 15 Total payroll identity

$$W_{1jt} = W_{2jt} + WS_{jt}$$

Identity 16 Payroll identity for consecutive-quarter employees

$$W_{2jt} = W_{1jt} - WCA_{jt} - WS_{jt}$$

Identity 17 Full-quarter payroll identity

$$W_{3jt} = W_{2jt} - WCA_{jt}$$

Identity 18 New hires/recalls identity

$$A_{jt} = H_{jt} + R_{jt}$$

Identity 19 Periods of non-employment identity

$$NA_{jt} = NH_{jt} + NR_{jt}$$

Identity 20 Worker-jobs in period t are the sum of accessions and beginning of period employment.

$$M_{jt} = A_{jt} + B_{jt}$$

Identity 21 Worker-jobs in period t are the sum of accessions to consecutive quarter status, separations, and full quarter workers.

$$M_{jt} = CA_{jt} + S_{jt} + F_{jt}$$

Identity 22 Consecutive quarter accessions in period $t-1$ are the sum of consecutive quarter separations in period t and full quarter accessions in period t

$$CA_{jt-1} - CS_{jt} = FA_{jt} - FS_{jt}$$

7.5 Aggregation of flows

The rate of growth is equal to the ratio of net job flows to total employment:

$$G_{jt} = JF_{jt} \,/\, \bar{E}_{jt} \tag{7.104}$$

So, to impute the aggregate growth rate in a county (or sic) for some group of firms, let

$$G_{kt} = \frac{\sum\limits_{j \in \{K(j)=k\}} \bar{E}_{jt} \times G_{jt}}{\bar{E}_{kt}} \tag{7.105}$$

for county k where the function $K(j)$ indicates the classification associated with firm j.

We calculate the aggregate job flow as

$$JF_{kt} = \sum_{j \in \{K(j)=k\}} JF_{jt}. \tag{7.106}$$

Substitution yields

$$JF_{kt} = \sum_{j} (\bar{E}_{jt} \times G_{jt}) = G_{kt} \times \bar{E}_{kt}, \tag{7.107}$$

so the aggregate job flow, as computed, is equivalent to the aggregate growth rate times aggregate employment. Gross job creation/destruction are related to job creation/destruction rates by similar logic (Davis et al. 1996, p. 189 for details).

Chapter 8

Disclosure proofing

8.1 Overview

Our current disclosure-proofing procedure is a three-level confidentiality protection system. The first level is multiplicative noise applied at the SEIN level. The second level of confidentiality protection is a set of table-level and cell-level suppressions. The third level of confidentiality protection adjusts the table-level estimates using information from the BLS CEW series.

We distort all the business-entity level micro data by a (minimum,maximum) percentage that is determined by the number of establishments in the *county* x *sic_division* unit (more populated *county* x *sic_division* estimation units get less micro distortion; less populated ones get more micro distortion). The noise-distortion factor is a permanent characteristic of the business-entity (i.e., it does not change over time). Table-level estimates for all *year:quarter* geography_classification or industry_classification statistics are produced using the distorted micro data. Estimates are flagged as "significantly distorted to protect confidentiality" if either (a) the estimate based on the distorted data differs from the undistorted estimate by more than a fixed percentage or (b) the estimate is based on fewer than a given minimum number of establishments or employees (i.e., it would have been a primary suppression based on this rule). Cell-level (*sex* x *age*) suppression is performed whenever the cell estimate is based on fewer than 3 individuals. We do not do complementary suppression at the cell level because all of the other estimates in the confidentiality-protected table are already based on distorted micro data.

We distinguish between table-level protections and cell-level protections. Our current procedure has table-level suppression (i.e., suppresses all estimates for a given *year:quarter county* or *industry*) whenever the BLS suppresses the "month 1" employment estimate for the comparable *year:quarter county* or *industry*) statistic from its national Covered Employment and Wages (CEW) series.[1]

Finally, our current procedure rakes the table-level estimates so that the beginning-of-quarter employment estimate equals the "month 1" estimate from the BLS CEW series for the comparable universe. Flow statistics are also raked at the table-level for consistency.

8.2 Multiplicative noise step

This section discusses the multiplicative noise model. In the multiplicative noise model, a random fuzz factor δ_j is drawn for each employer j according to the following process:

$$p(\delta_j) = \begin{cases} (b-\delta) \Big/ (b-a)^2, & \delta \in [a, b] \\ (b+\delta-2) \Big/ (b-a)^2, & \delta \in [2-b, 2-a] \end{cases}$$

$$F(\delta_j) = \begin{cases} 0.5 + \left[(b-a)^2 - (b-\delta)^2\right] \Big/ \left[2(b-a)^2\right], & \delta \in [a, b] \\ \left[(\delta+b-2)^2\right] \Big/ \left[2(b-a)^2\right], & \delta \in [2-b, 2-a] \end{cases}$$

[1] See Appendix M on page 186 for details on the exact data series used.

where a and b are constants chosen such that $1 < a < b < 2$.[2] This produces a random noise factor centered around 1 with distortion of at least $a - 1$ and at most $b - 1$.

Fuzzing of totals The δ_j fuzz factor is used to fuzz all employer totals according to the multiplicative formula $B^*_{jt} = \delta_j \times B_{jt}$. Statistics fuzzed by this method are *B, E, M, F, A, S, H, R, FA, FS,* W_1, W_2, W_3*, NA, NH, NR,* and *NS.*

Fuzzing of averages of magnitude variables The fuzzed totals are used to construct the following averages: $ZW_2, ZW_3, ZWA, ZWS, ZNA, ZNH, ZNR,$ and ZNS. The averages are constructed from fuzzed numerators with unfuzzed denominators according to the formula $ZW^*_{2jt} = \frac{W^*_{2jt}}{E_{jt}} = \frac{\delta_j \times W_{2jt}}{E_{jt}}$.

Fuzzing of differences of counts and magnitudes Fuzzed net job flow is computed at the aggregate (k = county or SIC division) level as the product of the aggregated (unfuzzed) rate of growth and the aggregated fuzzed employment:

$$JF^*_{kt} = G_{kt} \times \bar{E}^*_{kt} = JF_{kt} \times \frac{\bar{E}^*_{kt}}{\bar{E}_{kt}}.$$

This method of fuzzing net job flow will consistently estimate net job flow because it takes the product of two consistent estimators. The formulas for fuzzing gross job creation and job destruction are similar:

$$JC^*_{kt} = JCR_{kt} \times \bar{E}^*_{kt} = JC_{kt} \times \frac{\bar{E}^*_{kt}}{\bar{E}_{kt}}$$

and

$$JD^*_{kt} = JDR_{kt} \times \bar{E}^*_{kt} = JD_{kt} \times \frac{\bar{E}^*_{kt}}{\bar{E}_{kt}}.$$

The same logic was used to fuzz wage changes: total change in earnings for accessions (all jobs), total change in earnings for full-quarter accessions (all jobs), total change in earnings for separations (all jobs), and total change in earnings for full-quarter separations (all jobs). (Symbols used below: $\Delta WA, \Delta WS$.) The unfuzzed total changes were divided by the unfuzzed denominators then multiplied by the ratio of the fuzzed denominator to the unfuzzed denominator for the computation of average change in earnings for accessions (all jobs), average change in earnings for full-quarter accessions (all jobs), average change in earnings for separations (all jobs), and average change in earnings for full-quarter separations (all jobs). (Symbols used below: $Z\Delta WA, Z\Delta WS$.) Averages are fuzzed by multiplying by the ratio of the fuzzed denominator to the true denominator. For example:

$$Z\Delta WA^*_{kt} = \frac{\Delta WA_{kt}}{A_{kt}} \times \frac{A^*_{kt}}{A_{kt}}.$$

8.3 Cell suppression step

We next combine noise addition and limited disclosure of the size of small cells to provide the most useful set of county and industry-level statistics without eliminating the possibility of performing custom tabulations for some county-industry pairs. The rules are summarized below.

1. For the variables *B, E, F, A, H, R, S, FA, FS* and H_3, if the cell contains 1 or 2 individuals, then publish "d" in the cell with the footnote that the cell contains fewer than three individuals. Do not adjust other cells or margins. Verify that whenever one of these cells is exactly 1, the variables W_1, ZW_2, ZW_3, ZWA, ZWS, ZNA, ZNH, ZNR, ZNS, ZW_3, $Z\Delta WA$, and $Z\Delta WS$, are all distorted by the minimum acceptable percentage.[3]

2. If the distorted variable, or the statistic used to distort a particular variable, differs from the actual value by at least a given percentage,[4] flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

[2] The exact numbers are confidential.
[3] The exact number is confidential.
[4] The exact number is confidential.

3. For the variables JF, JC, JD, if B or E satisfy 1 or 2 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

4. For the variables FJF, FJC, FJD, if F satisfies 1 or 2 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

5. For the variable ZW_2, if E satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

6. For the variables ZW_3, if F satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

7. For the variables ZWA, ZNA, and $Z\Delta WA$, if A satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

8. For the variables ZWS, ZNS, and $Z\Delta WS$, if S satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

9. For the variables ZNH and ZNR, if H or R satisfy 1 or 2 above, flag the statistic with an asterisk and the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

10. For the variables ZWA, ZNA, and $Z\Delta WA$, if A satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

11. For the variables ZWS, ZNS, and $Z\Delta WS$, if S satisfies 1 above, flag the statistic with an asterisk. Add the notation "the value of this cell was significantly distorted in order to preserve the confidentiality of the underlying data."

8.4 Table suppression and raking

This section describes the current state of the raking algorithm for employment dynamic estimates (EDEs). The rake is performed on interior $Age \times Sex$ cells, which retains identities between EDE variables at the interior cell level, as well as for margin and table totals. Raked values of age and sex margins of all EDE variables *except* JC and JD are defined as the sum of raked interior cells. More information on the definition of raked margins of JC and JD is given in Section 8.4.1.

Let k index county, t index quarter, s index sex, and a index age. The following algorithm is applied separately to each county k in each quarter t.

Step 1. Compute the raking factor:

$$\gamma_{kt} = \frac{EMP_{kt}}{B_{kt++}} \tag{8.1}$$

where EMP_{kt} is the CEW employment count for county k in quarter t, and B_{kt++} is total "fuzzed" beginning of quarter employment (the $++$ denotes summation over s and a). This is the same raking factor used in earlier versions of the rake.

Step 2. Adjust cells of the beginning and end of quarter employment tables:

$$\tilde{B}_{ktsa} = \gamma_{kt} B_{ktsa} \tag{8.2}$$

$$\tilde{E}_{ktsa} = \gamma_{k,t+1} E_{ktsa} = \gamma_{k,t+1} B_{k,t+1,sa} \ . \tag{8.3}$$

The resulting table totals are the same as those obtained in earlier versions of the rake:

$$\tilde{B}_{kt++} = \sum_s \sum_a \tilde{B}_{ktsa} = \sum_s \sum_a \gamma_{kt} B_{ktsa} = \gamma_{kt} B_{kt++} \tag{8.4}$$

$$\tilde{E}_{kt++} = \sum_s \sum_a \tilde{E}_{ktsa} = \sum_s \sum_a \gamma_{k,t+1} E_{ktsa} = \gamma_{k,t+1} E_{kt++} \ . \tag{8.5}$$

Step 3. Generate candidate raked values of JF, JC, JD, S, A. Note the system of equations defining these statistics is overidentified. Net job flows are computed as

$$\widetilde{JF}_{ktsa} = \tilde{E}_{ktsa} - \tilde{B}_{ktsa} \tag{8.6}$$

and it is easy to verify that $\widetilde{JF}_{kt++} = \tilde{E}_{kt++} - \tilde{B}_{kt++}$. One candidate definition for raked job creations and destructions is

$$\widetilde{JD}^{(1)}_{ktsa} = \gamma_{kt} JD_{ktsa} \tag{8.7}$$

$$\widetilde{JC}^{(1)}_{ktsa} = \widetilde{JF}_{ktsa} + \widetilde{JD}^{(1)}_{ktsa} \ . \tag{8.8}$$

This is the definition applied in earlier versions of the rake. A second candidate definition is

$$\widetilde{JC}^{(2)}_{ktsa} = \gamma_{kt} JC_{ktsa} \tag{8.9}$$

$$\widetilde{JD}^{(2)}_{ktsa} = \widetilde{JC}^{(2)}_{ktsa} - \widetilde{JF}_{ktsa} \ . \tag{8.10}$$

In general, $\widetilde{JD}^{(1)}_{ktsa} \neq \widetilde{JD}^{(2)}_{ktsa}$ and $\widetilde{JC}^{(1)}_{ktsa} \neq \widetilde{JC}^{(2)}_{ktsa}$. The raked values of JC and JD are the average of these two candidate values:

$$\widetilde{JC}_{ktsa} = \frac{1}{2}\left(\widetilde{JC}^{(1)}_{ktsa} + \widetilde{JC}^{(2)}_{ktsa}\right) \tag{8.11}$$

$$\widetilde{JD}_{ktsa} = \frac{1}{2}\left(\widetilde{JD}^{(1)}_{ktsa} + \widetilde{JD}^{(2)}_{ktsa}\right) \ . \tag{8.12}$$

It is easily verified that $\widetilde{JF}_{ktsa} = \widetilde{JC}_{ktsa} - \widetilde{JD}_{ktsa}\ \forall s, a$ as required.
A similar ambiguity surrounds the definition of accessions and separations, so the raked values are also computed as the average of candidate raked values:

$$\tilde{A}^{(1)}_{ktsa} = \gamma_{ktsa} A_{ktsa} \tag{8.13}$$

$$\tilde{S}^{(1)}_{ktsa} = \tilde{A}^{(1)}_{ktsa} - \widetilde{JF}_{ktsa} \tag{8.14}$$

$$\tilde{S}^{(2)}_{ktsa} = \gamma_{ktsa} S_{ktsa} \tag{8.15}$$

$$\tilde{A}^{(2)}_{ktsa} = \widetilde{JF}_{ksta} + \tilde{S}^{(2)}_{ktsa} \tag{8.16}$$

$$\tilde{A}_{ktsa} = \frac{1}{2}\left(\tilde{A}^{(1)}_{ktsa} + \tilde{A}^{(2)}_{ktsa}\right) \tag{8.17}$$

$$\tilde{S}_{ktsa} = \frac{1}{2}\left(\tilde{S}^{(1)}_{ktsa} + \tilde{S}^{(2)}_{ktsa}\right) \ . \tag{8.18}$$

Again it is easy to verify that $\widetilde{JF}_{ktsa} = \tilde{A}_{ktsa} - \tilde{S}_{ktsa}$ and $\widetilde{JF}_{kt++} = \tilde{A}_{kt++} - \tilde{S}_{kt++}$.

Step 4. Adjust raked values of JC, JD, A, S to ensure non-negativity. The above definitions do not guarantee that the raked values of creations, destructions, accessions, and separations are non-negative. The following example demonstrates how the raked values are adjusted in the case where some raked values of job creations are negative in county k in quarter t[5]. The intuition behind the method is as follows. Negative job creations are "really" destructions. Hence we inflate the value of both creations and destructions to retain the identity $JF = JC - JD$, while ensuring the non-negativity of job creations. Since we don't know how to allocate the discrepancy across cells, it is done in proportion to beginning of quarter employment.

[5]Note a corresponding procedure is applied when raked values of JD, A, S are negative. The same methods are also applied to raking industry-quarter tables.

(a) In county-quarters for which $\widetilde{JC}_{ktsa} < 0$ for some sa, define

$$x_{ktsa} = \widetilde{JC}_{ktsa}\left(\frac{\tilde{B}_{kt++}}{\tilde{B}_{ktsa}}\right) = \widetilde{JC}_{ktsa}\left(\frac{B_{kt++}}{B_{ktsa}}\right)$$

for each $ktsa$ cell.

(b) Let $x_{kt} = \min_{s,a}\left(x_{ktsa}\right)$. Note $x_{kt} < 0$ since $\widetilde{JC}_{ktsa} < 0$ for some sa by hypothesis.

(c) Redefine the raked values of creations and destructions as

$$\widetilde{JC}_{ktsa} = \frac{1}{2}\left(\widetilde{JC}^{(1)}_{ktsa} + \widetilde{JC}^{(2)}_{ktsa}\right) - x_{kt}\left(\frac{B_{ktsa}}{B_{kt++}}\right) \tag{8.19}$$

$$\widetilde{JD}_{ktsa} = \frac{1}{2}\left(\widetilde{JD}^{(1)}_{ktsa} + \widetilde{JD}^{(2)}_{ktsa}\right) - x_{kt}\left(\frac{B_{ktsa}}{B_{kt++}}\right) . \tag{8.20}$$

It is clear that x_{kt} is the smallest factor (in absolute value) which resets all $\widetilde{JC}_{ktsa} \geq 0$. In particular, for the sa cell for which $x_{ktsa} = x_{kt}$, $\widetilde{JC}_{ktsa} = 0$. Furthermore, $\widetilde{JF}_{ktsa} = \widetilde{JC}_{ktsa} - \widetilde{JD}_{ktsa}\ \forall s, a$ as required.

Step 5. Compute the raked values of hires and recalls:

$$\tilde{H}_{ktsa} = H_{ktsa}\frac{\tilde{A}_{ktsa}}{A_{ktsa}} \tag{8.21}$$

$$\tilde{R}_{ktsa} = R_{ktsa}\frac{\tilde{A}_{ktsa}}{A_{ktsa}} \tag{8.22}$$

which have the property that $\tilde{A}_{ktsa} = \tilde{H}_{ktsa} + \tilde{R}_{ktsa}$ and $\tilde{A}_{kt++} = \tilde{H}_{kt++} + \tilde{R}_{kt++}$.

8.4.1 Notes on the definition of table and margin totals of aggregated job creations and destructions

Version 2.2 differs from Version 2.3 only in this section. Version 2.2 applies the definitions shown in this section to only the sex margin and not to the age margin. The formulas shown in this section, which apply the raking correction to both the sex and age margins were used for version 2.3.

For all statistics except job creations and job destructions, table and margin totals are computed as the sum of interior cells. Since job creations and job destructions are SEIN-level concepts (as opposed to PIK-level), the table totals for these statistics are raked independently of the interior cells. Abusing notation slightly[6], define:

$$\widetilde{JD}^{(1)}_{kt++} = \gamma_{kt} JD_{kt++} \tag{8.23}$$

$$\widetilde{JD}^{(1)}_{kts+} = \gamma_{kt} JD_{kts+} \tag{8.24}$$

$$\widetilde{JD}^{(1)}_{kt+a} = \gamma_{kt} JD_{kt+a} \tag{8.25}$$

$$\widetilde{JC}^{(1)}_{kt++} = \widetilde{JF}_{kt++} + \widetilde{JD}^{(1)}_{kt++} \tag{8.26}$$

$$\widetilde{JC}^{(1)}_{kts+} = \widetilde{JF}_{kts+} + \widetilde{JD}^{(1)}_{kts+} \tag{8.27}$$

$$\widetilde{JC}^{(1)}_{kt+a} = \widetilde{JF}_{kt+a} + \widetilde{JD}^{(1)}_{kt+a} \tag{8.28}$$

[6] In this Section, the $+$ in raked table and margin totals of JC and JD no longer indicates summation of raked interior cells. It now denotes the appropriate table or margin total.

$$\widetilde{JC}^{(2)}_{kt++} = \gamma_{kt} JC_{kt++} \quad (8.29)$$
$$\widetilde{JC}^{(2)}_{kts+} = \gamma_{kt} JC_{kts+} \quad (8.30)$$
$$\widetilde{JC}^{(2)}_{kt+a} = \gamma_{kt} JC_{kt+a} \quad (8.31)$$
$$\widetilde{JD}^{(2)}_{kt++} = \widetilde{JC}^{(2)}_{kt++} - \widetilde{JF}_{kt++} \quad (8.32)$$
$$\widetilde{JD}^{(2)}_{kts+} = \widetilde{JC}^{(2)}_{kts+} - \widetilde{JF}_{kts+} \quad (8.33)$$
$$\widetilde{JD}^{(2)}_{kt+a} = \widetilde{JC}^{(2)}_{kt+a} - \widetilde{JF}_{kt+a} \; . \quad (8.34)$$

The raked values of job creations and job destructions at the table margin and total level are defined by the averages

$$\widetilde{JC}_{kt++} = \frac{1}{2}\left(\widetilde{JC}^{(1)}_{kt++} + \widetilde{JC}^{(2)}_{kt++}\right) \quad (8.35)$$
$$\widetilde{JC}_{kts+} = \frac{1}{2}\left(\widetilde{JC}^{(1)}_{kts+} + \widetilde{JC}^{(2)}_{kts+}\right) \quad (8.36)$$
$$\widetilde{JC}_{kt+a} = \frac{1}{2}\left(\widetilde{JC}^{(1)}_{kt+a} + \widetilde{JC}^{(2)}_{kt+a}\right) \quad (8.37)$$
$$\widetilde{JD}_{kt++} = \frac{1}{2}\left(\widetilde{JD}^{(1)}_{kt++} + \widetilde{JD}^{(2)}_{kt++}\right) \quad (8.38)$$
$$\widetilde{JD}_{kts+} = \frac{1}{2}\left(\widetilde{JD}^{(1)}_{kts+} + \widetilde{JD}^{(2)}_{kts+}\right) \quad (8.39)$$
$$\widetilde{JD}_{kt+a} = \frac{1}{2}\left(\widetilde{JD}^{(1)}_{kt+a} + \widetilde{JD}^{(2)}_{kt+a}\right) \quad (8.40)$$

These statistics have the property that

$$\widetilde{JF}_{kt++} = \widetilde{JC}_{kt++} - \widetilde{JD}_{kt++} \quad (8.41)$$
$$\widetilde{JF}_{kts+} = \widetilde{JC}_{kts+} - \widetilde{JD}_{kts+} \quad (8.42)$$
$$\widetilde{JF}_{kt+a} = \widetilde{JC}_{kt+a} - \widetilde{JD}_{kt+a} \quad (8.43)$$

as required. However $\sum_s \sum_a \widetilde{JC}_{ktsa} \neq \widetilde{JC}_{kt++}$ and $\sum_s \sum_a \widetilde{JD}_{ktsa} \neq \widetilde{JD}_{kt++}$ (and similarly at the sex and age margins). However, it is true that

$$\sum_s \sum_a \widetilde{JC}_{ktsa} - \sum_s \sum_a \widetilde{JD}_{ktsa} = \sum_s \sum_a \left(\widetilde{JC}_{ktsa} - \widetilde{JD}_{ktsa}\right) \quad (8.44)$$
$$= \sum \sum \widetilde{JF}_{ktsa} \quad (8.45)$$
$$= \widetilde{JF}_{kt++} \quad (8.46)$$
$$= \widetilde{JC}_{kt++} - \widetilde{JD}_{kt++} \; . \quad (8.47)$$

A similar equality is obtained at the sex and age margins.

Actual tables

1. Totals: $B, E, F, JF, JC, JD, FJF, FJC, FJD, A, S, H, R, FA, FS$
2. Averages: ZW_2, ZW_3, $ZWFA$, $Z\Delta WA$, $ZWFS$, $Z\Delta WS$, ZNA, ZNH, ZNR, ZNS
3. All tables produced with fuzzed raked data annotated as follows:
   - $*$ indicates significant distortion is necessary to preserve confidentiality
   - d indicates an estimate is based on < 3 employees
   - n indicates an estimate is not defined because no employees are in the relevant category

8.5 Analysis of different suppression strategies

In small counties or industries, the employment statistics may be calculated on a group of employers or workers that is so small as to raise concerns about protecting their confidentiality. This is particularly true when statistics are reported for detailed age groups. For instance, if an entire industry contains only a few male workers in a certain age group, then reporting payroll for the industry could convey too much information about each male worker in that industry and age range. Two solutions to this problem are investigated. The traditional solution is to combine small cells (for example, combining two adjacent age groups for males, or combining males and females for that age group) and to report only statistics that are aggregated across the combined cells. This is known as primary and complementary cell suppression. It can also be performed at a higher level of aggregation (for instance, aggregating statistics across two or more counties or industries). Census has elaborate computer programs for choosing the complementary suppressions.

A more recent approach (Evans, Zayatz & Slanta 1998) has been to introduce random noise to the microdata before aggregation. In this case, a random noise factor is generated independently for each SEIN. Prior to aggregation at the county/industry level, each SEIN-level statistic is multiplied by its noise factor. The advantage of this method is that even the smallest cells do not need to be combined. The disadvantage is that while they are unbiased estimates of the actual statistics, all of the employer-level statistics undergo this process rather than just the smallest cells so none of the exact values are reported. In cells with many employers, very little distortion of the cell values occurs. In cells with only a few employers (at the limit, one), values are all distorted a minimum amount. Version 2.3 implements multiplicative noise as described above in combination with a limited amount of cell suppression. In this section we show why we did not use conventional cell suppression methods.

We investigate the disclosure proofing using conventional cell suppression first. Under the Census Bureau's strictest rules for statistics produced from linked employer-employee data, we can determine which age groups and counties will require some cell suppression. We refer to this set of disclosure rules as the "most conservative" because they involve rather large minima for the number of individuals used to calculate a cell. We investigate the disclosure proofing using two different sets of age categories. The first set corresponds, at the younger ages, to categories important for the Workforce Investment Act (WIA), which we label WIA categories: ages 14-18, 19-21, 22-24, 25-34, 35-44, 45-54, 55-64, and 65+. The second set corresponds to traditional Current Population Survey age groups, which we label CPS categories: 16-19, 20-24, 25-34, 35-44, 45-54, 55-64, and 65+. Table 8.1 on the next page presents the analysis for WIA age categories under the most conservative approach. Table 8.2 on page 136 presents a similar analysis for CPS age categories.

Table 8.1 shows that only the largest counties have work forces large enough to permit publication of all of the statistics under the WIA categories. Table 8.2 shows a similar result for the CPS categories.

We investigate disclosure proofing using the noise multiplication model next.[7] The basic feature of this model is that it protects the confidentiality of an employer's data when there are few employers in the sample. This works well for cells with relatively few employers as long as there are a reasonable number of employees used to construct the cell. When the number of employees in the cell is small, the multiplicative noise model does not fully protect the confidentiality of an individual's identity. Hence, we combine the noise model with some cell suppression when "less conservative" cell size limits are not met. Tables 8.3 and 8.4 summarize these analyses for the WIA and CPS age categories, respectively.

Table 8.3 on page 139 shows that a much greater number of counties can be provided with detailed data using the combination of multiplicative noise and limited cell suppression. The employment and job flow statistics can be done for virtually every county. The worker flow statistics will require making some choices about levels of either age or geographic aggregation. Table 8.4 on page 142 provides similar information for the CPS age categories and leads to a similar conclusion.

[7] See Chapter 8 on page 126 for details of the noise multiplication model.

Table 8.1: Disclosure Problems, Most Conservative Cell Limits (i)

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
1	ADAMS			8	1,2,3,4,5,6,7,8	8
3	ALEXANDER	1,2,3,8	1,2,3,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
5	BOND	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
7	BOONE	1,8	1,8	1,2,3,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,6,7,8
9	BROWN	1,2,3,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
11	BUREAU	1	1	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
13	CALHOUN	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
15	CARROLL	1,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
17	CASS	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
19	CHAMPAIGN				3,7,8	
21	CHRISTIAN		8	1,2,3,6,7,8	2,3,4,5,6,7,8	1,2,3,6,7,8
23	CLARK	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
25	CLAY	1,2,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
27	CLINTON			1,2,3,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
29	COLES			7,8	1,2,3,4,5,6,7,8	1,7,8
31	COOK					
33	CRAWFORD	1,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
35	CUMBERLAND	1,2,3,7,8	1,2,3,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
39	DE WITT	1,2,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
37	DEKALB			7,8	1,2,3,4,5,6,7,8	7,8
41	DOUGLAS	8	2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
43	DUPAGE					
45	EDGAR	1,2,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
47	EDWARDS	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
49	EFFINGHAM			7,8	1,2,3,4,5,6,7,8	6,7,8
51	FAYETTE	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
53	FORD	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
55	FRANKLIN		1	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
57	FULTON		1	1,2,3,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
59	GALLATIN	1,2,3,4,7,8	1,2,3,4,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
61	GREENE	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
63	GRUNDY		8	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
65	HAMILTON	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
67	HANCOCK	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
69	HARDIN	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
71	HENDERSON	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
73	HENRY			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
75	IROQUOIS			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
77	JACKSON			7,8	1,2,3,4,5,6,7,8	7,8
79	JASPER	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8

(cont.)

Table 8.1: Disclosure Problems, Most Conservative Cell Limits (i)(cont.)

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
81	JEFFERSON		8	1,7,8	1,2,3,4,5,6,7,8	1,3,7,8
83	JERSEY	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
85	JO DAVIESS		8	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
87	JOHNSON	1,2,3,6,7,8	1,2,3,4,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
89	KANE				1,7,8	
91	KANKAKEE			8	1,2,3,4,5,6,7,8	8
93	KENDALL		8	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
95	KNOX			1,7,8	1,2,3,4,5,6,7,8	1,7,8
99	LA SALLE			8	1,2,3,4,5,6,7,8	8
97	LAKE					
101	LAWRENCE	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
103	LEE			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
105	LIVINGSTON			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
107	LOGAN		1	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
115	MACON			8	1,2,3,4,5,6,7,8	8
117	MACOUPIN			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
119	MADISON				1,3,7,8	
121	MARION			1,2,7,8	1,2,3,4,5,6,7,8	1,2,3,7,8
123	MARSHALL	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
125	MASON	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
127	MASSAC	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
109	MCDONOUGH		1	1,6,7,8	1,2,3,4,5,6,7,8	1,6,7,8
111	MCHENRY				1,2,3,7,8	
113	MCLEAN			8	1,2,3,6,7,8	8
129	MENARD	1,2,3,7,8	1,2,3,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
131	MERCER	1,2,3,8	1,2,3,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
133	MONROE	1,8	1,2,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
135	MONTGOMERY		1	1,2,3,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
137	MORGAN			1,3,6,7,8	1,2,3,4,5,6,7,8	1,3,6,7,8
139	MOULTRIE	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
141	OGLE			7,8	1,2,3,4,5,6,7,8	1,2,7,8
143	PEORIA				1,2,7,8	
145	PERRY	1,2,3,8	1,2,3,8	1,2,3,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
147	PIATT	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
149	PIKE	1,2,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
151	POPE	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
153	PULASKI	1,2,3,7,8	1,2,3,4,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
155	PUTNAM	1,2,3,6,7,8	1,2,3,4,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
157	RANDOLPH			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
159	RICHLAND	8	1,8	1,2,3,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,6,7,8

(cont.)

Table 8.1: Disclosure Problems, Most Conservative Cell Limits (i)(cont.)

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
161	ROCK ISLAND			8	1,2,3,7,8	
165	SALINE	1,8	1,8	1,2,3,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
167	SANGAMON				1,8	
169	SCHUYLER	1,2,3,7,8	1,2,3,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
171	SCOTT	1,2,3,6,7,8	1,2,3,4,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
173	SHELBY	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
163	ST.CLAIR				1,3,7,8	
175	STARK	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8
177	STEPHENSON			1,7,8	1,2,3,4,5,6,7,8	1,7,8
179	TAZEWELL			8	1,2,3,4,5,6,7,8	8
181	UNION	1,2,8	1,2,3,8	1,2,3,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
183	VERMILION			8	1,2,3,4,5,6,7,8	8
185	WABASH	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
187	WARREN	1,8	1,2,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
189	WASHINGTON	1,2,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
191	WAYNE	1,2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
193	WHITE	1,.2,3,8	1,2,3,8	1,2,3,4,5,6,7,8	0,1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8
195	WHITESIDE			7,8	1,2,3,4,5,6,7,8	1,7,8
197	WILL				1,3,7,8	
199	WILLIAMSON			7,8	1,2,3,4,5,6,7,8	1,7,8
201	WINNEBAGO				1,7,8	
203	WOODFORD			1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
	Total Count	*54*	*64*	*91*	*100*	*90*

Notes: Age groups are 0=All ages, 1=14-18, 2=19-21, 3=22-24, 4=25-34, 5=35-44, 6=45-54, 7=55-64, 8=65+. The numbers in the columns indicate that at least one sex category in that age group has disclosure problems for the indicated variable group and county.

Table 8.2: Disclosure Problems, Most Conservative Cell Limits (ii)

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
1	ADAMS			7	1,2,3,4,5,6,7	7
3	ALEXANDER	1,2,7	1,2,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
5	BOND	1,2,7	1,2,7	1,2,3,4,5,6,7,	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
7	BOONE	7	1,7	1,5,6,7	0,1,2,3,4,5,6,7	1,2,5,6,7
9	BROWN	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
11	BUREAU			1,5,6,7	1,2,3,4,5,6,7	1,5,6,7
13	CALHOUN	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
15	CARROLL	7	1,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7,	1,2,3,4,5,6,7
17	CASS	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
19	CHAMPAIGN				1,6,7	
21	CHRISTIAN		7	1,5,6,7	1,2,3,4,5,6,7	1,2,5,6,7
23	CLARK	7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
25	CLAY	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
27	CLINTON			1,5,6,7	0,1,2,3,4,5,6,7	1,4,5,6,7
29	COLES			6,7	1,2,3,4,5,6,7	6,7
31	COOK					
33	CRAWFORD	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
35	CUMBERLAND	1,2,6,7	1,2,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
39	DE WITT	7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
37	DEKALB			6,7	1,2,3,4,5,6,7	6,7
41	DOUGLAS	7		1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
43	DUPAGE					
45	EDGAR	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
47	EDWARDS	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
49	EFFINGHAM			6,7	1,2,3,4,5,6,7	5,6,7
51	FAYETTE	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
53	FORD	1,2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
55	FRANKLIN			1,5,6,7	1,2,3,4,5,6,7	1,5,6,7
57	FULTON			1,4,5,6,7	1,2,3,4,5,6,7	1,4,5,6,7
59	GALLATIN	1,2,3,6,7	1,2,3,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
61	GREENE	1,2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
63	GRUNDY		7	5,6,7	1,2,3,4,5,6,7	5,6,7
65	HAMILTON	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
67	HANCOCK	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
69	HARDIN	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
71	HENDERSON	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
73	HENRY			5,6,7	1,2,3,4,5,6,7	1,5,6,7
75	IROQUOIS			1,5,6,7	1,2,3,4,5,6,7	1,2,5,6,7
77	JACKSON				1,2,3,4,5,6,7	6,7
79	JASPER	1,2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7

(cont.)

Table 8.2: Disclosure Problems, Most Conservative Cell Limits (ii) (cont.)

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
81	JEFFERSON		7	6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7
83	JERSEY	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
85	JO DAVIESS		7	1,4,5,6,7	1,2,3,4,5,6,7	1,4,5,6,7
87	JOHNSON	1,2,5,6,7	1,2,3,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
89	KANE				6,7	
91	KANKAKEE			7	1,2,3,4,5,6,7	7
93	KENDALL		7	5,6,7	1,2,3,4,5,6,7	1,2,5,6,7
95	KNOX			7	1,2,3,4,5,6,7	6,7
99	LA SALLE			7	1,2,3,4,5,6,7	7
97	LAKE					
101	LAWRENCE	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
103	LEE			1,5,6,7	1,2,3,4,5,6,7	1,2,5,6,7
105	LIVINGSTON			5,6,7	1,2,3,4,5,6,7	1,5,6,7
107	LOGAN			1,5,6,7	1,2,3,4,5,6,7	1,5,6,7
115	MACON			7	1,2,3,4,5,6,7	7
117	MACOUPIN			5,6,7	1,2,3,4,5,6,7	1,5,6,7
119	MADISON					
121	MARION			1,6,7	1,2,3,4,5,6,7	1,6,7
123	MARSHALL	1,2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
125	MASON	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
127	MASSAC	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
109	MCDONOUGH			1,5,6,7	1,2,3,4,5,6,7	1,5,6,7
111	MCHENRY				1,2,6,7	
113	MCLEAN			7	1,5,6,7	7
129	MENARD	1,2,6,7	1,2,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
131	MERCER	1,2,7	1,2,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
133	MONROE	7	7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
135	MONTGOMERY			1,5,6,7	0,1,2,3,4,5,6,7	1,2,4,5,6,7
137	MORGAN			5,6,7	1,2,3,4,5,6,7	1,5,6,7
139	MOULTRIE	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
141	OGLE			6,7	1,2,3,4,5,6,7	1,6,7
143	PEORIA				1,6,7	
145	PERRY	1,7	1,7	1,2,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
147	PIATT	1,2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
149	PIKE	7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
151	POPE	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
153	PULASKI	1,2,6,7	1,2,3,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
155	PUTNAM	1,2,5,6,7	1,2,3,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
157	RANDOLPH			5,6,7	1,2,3,4,5,6,7	1,5,6,7
159	RICHLAND	7	7	1,2,5,6,7	0,1,2,3,4,5,6,7	1,2,5,6,7

(cont.)

Table 8.2: Disclosure Problems, Most Conservative Cell Limits (ii) (cont.)

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
161	ROCK ISLAND			7	1,6,7	
165	SALINE	7	7	1,5,6,7	0,1,2,3,4,5,6,7	1,2,4,5,6,7
167	SANGAMON				1,7	
169	SCHUYLER	1,2,6,7	1,2,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
171	SCOTT	1,2,5,6,7	1,2,3,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
173	SHELBY	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
163	ST.CLAIR				1,6,7	
175	STARK	1,2,3,4,5,6,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
177	STEPHENSON			6,7	1,2,3,4,5,6,7	6,7
179	TAZEWELL			7	1,2,3,4,5,6,7	7
181	UNION	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,4,5,6,7
183	VERMILION			7	1,2,3,4,5,6,7	7
185	WABASH	2,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
187	WARREN	7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
189	WASHINGTON	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
191	WAYNE	1,7	1,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
193	WHITE	1,7	1,2,7	1,2,3,4,5,6,7	0,1,2,3,4,5,6,7	1,2,3,4,5,6,7
195	WHITESIDE			6,7	1,2,3,4,5,6,7	6,7
197	WILL					
199	WILLIAMSON			6,7	1,2,3,4,5,6,7	6,7
201	WINNEBAGO				1,7	
203	WOODFORD			1,2,5,6,7	0,1,2,3,4,5,6,7	1,2,4,5,6,7
	Count	*53*	*57*	*90*	*98*	*90*

Notes: Age groups are 0=All ages, 1=14-18, 2=19-21, 3=22-24, 4=25-34, 5=35-44, 6=45-54, 7=55-64, 8=65+. The numbers in the columns indicate that at least one sex category in that age group has disclosure problems for the indicated variable group and county.

Table 8.3: Disclosure Problems, Noise Plus Less Conservative Cell Limits

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
1	ADAMS					
3	ALEXANDER			8	1,2,3,4,5,6,7,8	7,8
5	BOND			8	1,2,3,5,6,7,8	8
7	BOONE				1,8	
9	BROWN			2,3,7,8	1,2,3,4,5,6,7,8	1,2,3,7,8
11	BUREAU				1,2,8	
13	CALHOUN			1,2,3,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
15	CARROLL				1,2,3,7,8	
17	CASS				1,2,3,7,8	
19	CHAMPAIGN					
21	CHRISTIAN				1,8	
23	CLARK				1,2,3,6,7,8	
25	CLAY			8	1,2,3,5,6,7,8	8
27	CLINTON				3,8	
29	COLES					
31	COOK					
33	CRAWFORD				1,2,3,7,8	
35	CUMBERLAND			7,8	1,2,3,4,5,6,7,8	8
39	DE WITT				1,2,3,8	
37	DEKALB					
41	DOUGLAS				1,8	
43	DUPAGE					
45	EDGAR				1,2,3,6,7,8	
47	EDWARDS			1,2,7,8	1,2,3,4,5,6,7,8	7,8
49	EFFINGHAM					
51	FAYETTE				1,2,3,6,7,8	
53	FORD				1,2,3,6,7,8	
55	FRANKLIN				1,8	
57	FULTON				1,7,8	
59	GALLATIN		1	1,3,7,8	1,2,3,4,5,6,7,8	1,3,7,8
61	GREENE				1,2,3,4,6,7,8	
63	GRUNDY				3,8	
65	HAMILTON			3,7,8	1,2,3,4,5,6,7,8	7,8
67	HANCOCK				1,2,3,7,8	
69	HARDIN	1	1	1,2,3,5,6,7,8	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8
71	HENDERSON		1	1,2,3,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
73	HENRY				1	
75	IROQUOIS				1	
77	JACKSON					
79	JASPER			8	1,2,3,4,5,6,7,8	8

(cont.)

Table 8.3: Disclosure Problems, Noise Plus Less Conservative Cell Limits (cont.)

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
81	JEFFERSON				1,8	
83	JERSEY			8	1,2,3,5,6,7,8	
85	JO DAVIESS				1	
87	JOHNSON			7,8	1,2,3,4,5,6,7,8	1,7,8
89	KANE					
91	KANKAKEE					
93	KENDALL				3,8	
95	KNOX					
99	LA SALLE					
97	LAKE					
101	LAWRENCE				1,2,3,4,7,8	
103	LEE				1,8	
105	LIVINGSTON					
107	LOGAN				1,8	
115	MACON					
117	MACOUPIN				8	
119	MADISON					
121	MARION				8	
123	MARSHALL			8	1,2,3,6,8	
125	MASON				1,2,3,6,7,8	
127	MASSAC			8	1,2,3,4,6,7,8	8
109	MCDONOUGH				1,8	
111	MCHENRY					
113	MCLEAN					
129	MENARD			8	1,2,3,4,5,6,7,8	8
131	MERCER			8	1,2,3,5,6,7,8	
133	MONROE				1,3,7,8	
135	MONTGOMERY				2,3,8	
137	MORGAN				1	
139	MOULTRIE				1,2,3,4,5,6,7,8	
141	OGLE					
143	PEORIA					
145	PERRY			8	1,2,3,6,8	
147	PIATT				1,2,3,7,8	8
149	PIKE				1,2,3,7,8	
151	POPE	1,2	1,2,3	1,2,3,6,7,8	1,2,3,4,5,6,7,8	1,2,3,4,6,7,8
153	PULASKI			1,2,8	1,2,3,4,5,6,7,8	1,3,8
155	PUTNAM			8	1,2,3,4,5,6,7,8	7,8
157	RANDOLPH				1,8	
159	RICHLAND				1,2,8	

(cont.)

Table 8.3: Disclosure Problems, Noise Plus Less Conservative Cell Limits (cont.)

WIA Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
161	ROCK ISLAND					
165	SALINE				1,3,8	
167	SANGAMON					
169	SCHUYLER			2,7,8	1,2,3,4,5,6,7,8	8
171	SCOTT			1,2,3,8	1,2,3,4,5,6,7,8	1,3,7,8
173	SHELBY				1,2,3,4,6,7,8	
163	ST.CLAIR					
175	STARK	1	1	1,6,7,8	1,2,3,4,5,6,7,8	1,2,3,6,7,8
177	STEPHENSON				8	
179	TAZEWELL					
181	UNION			8	1,2,3,7,8	
183	VERMILION				8	
185	WABASH				1,2,3,7,8	
187	WARREN				1,2,3,7,8	
189	WASHINGTON				1,2,3,7,8	
191	WAYNE			8	1,2,3,7,8	
193	WHITE				1,2,3,7,8	
195	WHITESIDE					
197	WILL					
199	WILLIAMSON				1,8	
201	WINNEBAGO					
203	WOODFORD					
	Count	*4*	*6*	*28*	*75*	*23*

Notes: Age groups are 0=All ages, 1=14-18, 2=19-21, 3=22-24, 4=25-34, 5=35-44, 6=45-54, 7=55-64, 8=65+. The numbers in the columns indicate that at least one sex category in that age group has disclosure problems for the indicated variable group and county.

Table 8.4: Disclosure Problems, Noise Plus Least Conservative Cell Limits

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
1	ADAMS					
3	ALEXANDER			7	1,2,3,4,5,6,7	1,6,7
5	BOND			7	1,2,3,4,5,6,7	7
7	BOONE				7	
9	BROWN			2,6,7	1,2,3,4,5,6,7	2,6,7
11	BUREAU				7	
13	CALHOUN			1,4,6,7	1,2,3,4,5,6,7	1,2,4,5,6,7
15	CARROLL				1,2,6,7	
17	CASS				1,2,6,7	
19	CHAMPAIGN					
21	CHRISTIAN				7	
23	CLARK				1,2,5,6,7	
25	CLAY			7	1,4,5,6,7	7
27	CLINTON				7	
29	COLES					
31	COOK					
33	CRAWFORD				1,6,7	
35	CUMBERLAND			6,7	1,2,3,4,5,6,7	7
39	DE WITT				1,7	
37	DEKALB					
41	DOUGLAS				7	
43	DUPAGE					
45	EDGAR				1,2,5,6,7	
47	EDWARDS			6,7	1,2,3,4,5,6,7	1,6,7
49	EFFINGHAM					
51	FAYETTE				1,5,6,7	
53	FORD				1,2,5,6,7	
55	FRANKLIN				1,7	
57	FULTON				6,7	
59	GALLATIN			6,7	1,2,3,4,5,6,7	1,6,7
61	GREENE				1,2,3,5,6,7	
63	GRUNDY				7	
65	HAMILTON			6,7	1,2,3,4,5,6,7	6,7
67	HANCOCK				1,6,7	
69	HARDIN			1,2,4,5,6,7	1,2,3,4,5,6,7	1,2,4,5,6,7
71	HENDERSON			1,6,7	1,2,3,4,5,6,7	1,2,5,6,7
73	HENRY					
75	IROQUOIS					
77	JACKSON					
79	JASPER			7	1,2,3,4,5,6,7	7

(cont.)

Table 8.4: Disclosure Problems, Noise Plus Least Conservative Cell Limits (cont.)

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
81	JEFFERSON				7	
83	JERSEY			7	1,4,5,6,7	
85	JO DAVIESS					
87	JOHNSON			6,7	1,2,3,4,5,6,7	1,6,7
89	KANE					
91	KANKAKEE					
93	KENDALL				7	
95	KNOX					
99	LA SALLE					
97	LAKE					
101	LAWRENCE				1,2,3,6,7	
103	LEE				7	
105	LIVINGSTON					
107	LOGAN				7	
115	MACON					
117	MACOUPIN				7	
119	MADISON					
121	MARION				7	
123	MARSHALL				1,2,5,7	
125	MASON				1,2,3,5,6,7	
127	MASSAC			7	1,2,3,5,6,7	7
109	MCDONOUGH				7	
111	MCHENRY					
113	MCLEAN					
129	MENARD			7	1,2,3,4,5,6,7	7
131	MERCER			7	1,2,4,5,6,7	
133	MONROE				1,2,6,7	
135	MONTGOMERY				7	
137	MORGAN					
139	MOULTRIE				1,4,5,6,7	
141	OGLE					
143	PEORIA					
145	PERRY			7	1,2,5,6,7	
147	PIATT			7	1,2,6,7	7
149	PIKE				1,2,6,7	
151	POPE		1	1,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7
153	PULASKI			1,7	1,2,3,4,5,6,7	1,7
155	PUTNAM			7	1,2,3,4,5,6,7	6,7
157	RANDOLPH				1,7	
159	RICHLAND				1,7	

(cont.)

Table 8.4: Disclosure Problems, Noise Plus Least Conservative Cell Limits (cont.)

CPS Age Categories by County (Illinois)

		Employment-based (B, E, M, JF, JC, JD, W1, ZW2)	Full Quarter Employment-based (F, ZW3)	Worker Accession-based (A, ZWA, ZDWA, ZNA)	Worker Hire/Recall-based (H, R, ZNH, ZNR)	Worker Separation-based (S, ZWS, ZDWS, ZNS)
161	ROCK ISLAND					
165	SALINE				1,7	
167	SANGAMON					
169	SCHUYLER			6,7	1,2,3,4,5,6,7	1,7
171	SCOTT			1,7	1,2,3,4,5,6,7	6,7
173	SHELBY				1,2,3,5,6,7	
163	ST.CLAIR					
175	STARK		1	5,6,7	1,2,3,4,5,6,7	1,5,6,7
177	STEPHENSON				7	
179	TAZEWELL					
181	UNION			7	1,6,7	
183	VERMILION				7	
185	WABASH				1,2,6,7	
187	WARREN				1,2,3,6,7	
189	WASHINGTON				7	
191	WAYNE			7	1,2,6,7	
193	WHITE				1,2,6,7	
195	WHITESIDE					
197	WILL					
199	WILLIAMSON				7	
201	WINNEBAGO					
203	WOODFORD					
	Count	*1*	*3*	*28*	*71*	*23*

Notes: Age groups are 0=All ages, 1=14-18, 2=19-21, 3=22-24, 4=25-34, 5=35-44, 6=45-54, 7=55-64, 8=65+. The numbers in the columns indicate that at least one sex category in that age group has disclosure problems for the indicated variable group and county.

8.6 Analysis of the distortion due to the use of noise in the disclosure proofing process

Table 8.5 shows the distribution of the error in the first order serial correlation coefficient based on estimating an AR(1) using the multiplicatively distorted data (r^*) and using the undistorted data (r) for all counties in Illinois. The table shows that none of our variables is seriously affected by the distortion. In particular, the semi-interquartile range of the distortion is less than the precision with which estimated serial correlation coefficients are normally displayed—generally less than 2%, which means that distortion is economically meaningless.

Table 8.5: Distribution of the Error in the First Order Serial Correlation Coefficient Due to Multiplicative Noise Distortion ($r^* - r$)

Quantile	Beginning of Quarter Employment	Accessions	Separations	Full Quarter Employment	Net Job Flows
99%	0.07894	0.07153	0.06711	0.06644	0.01104
95%	0.04338	0.04253	0.04070	0.03465	0.00503
90%	0.02610	0.03043	0.02826	0.01972	0.00314
75%	0.00946	0.01387	0.01326	0.00718	0.00124
50%	-0.00043	0.00103	0.00004	-0.00003	0.00000
25%	-0.01026	-0.01271	-0.01179	-0.00641	-0.00096
10%	-0.02520	-0.03012	-0.02592	-0.01720	-0.00281
5%	-0.03695	-0.04100	-0.03569	-0.02806	-0.00471
1%	-0.06984	-0.06863	-0.06645	-0.06185	-0.01038

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Appendix A

Overview of programming details

The following appendices describe the programming details behind the EDE. A summary overview is given by FigureṼreffig:flowchart, which also identifies the different components:

1. Processing of UI wage files: Appendix D on page 154
2. Editing of SSNs on UI wage files: see LEHD Technical paper TP 2002-01
3. Assignment of PIK for UI wage files: Appendix D on page 154
4. Processing of PCF: Appendix E on page 158
5. Creation of Employment History File: Appendix F on page 160
6. Creation of Individual Characteristics File: Appendix G on page 163
7. Creation of Person Flows File: Appendix H on page 168
8. Processing of CEW (ES-202) wage files: Appendix I on page 169
9. Creation of Employer Characteristics File: Appendix J on page 171
10. Creation of Job Flows: Appendix K on page 184

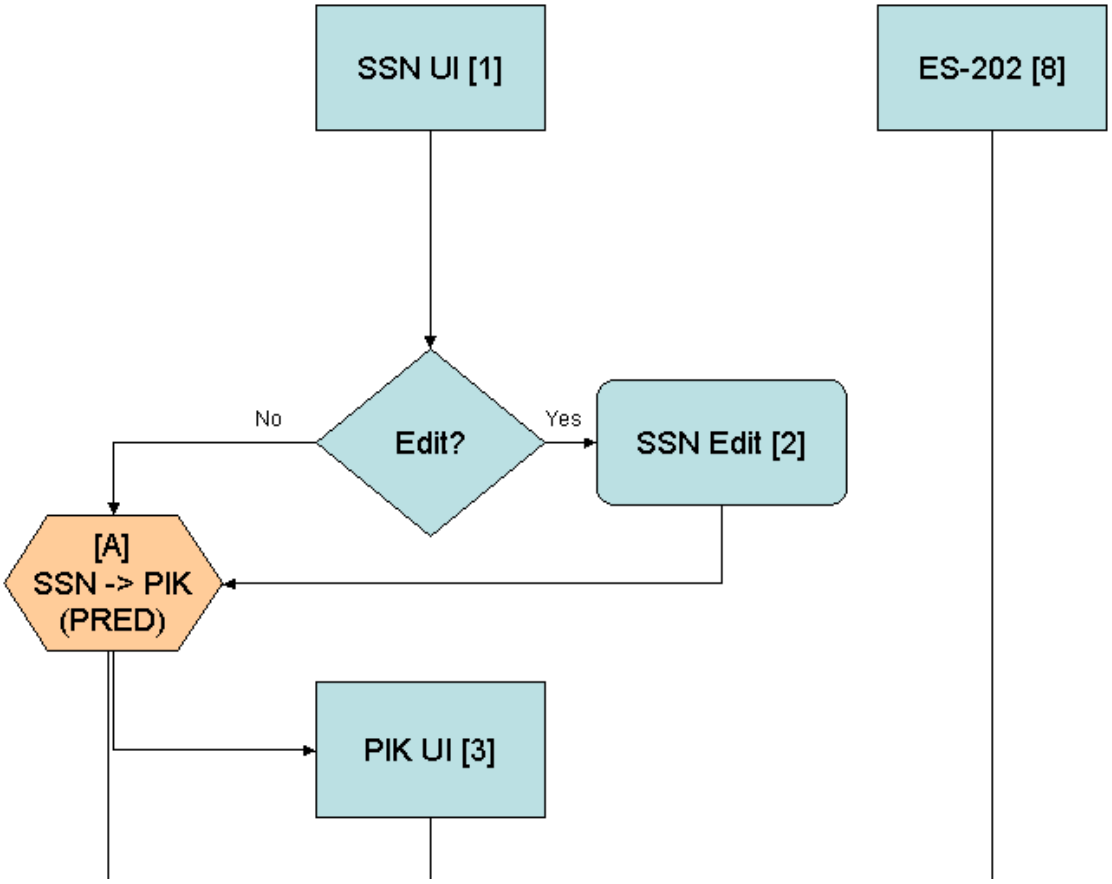

Figure A.1: Processing flowchart

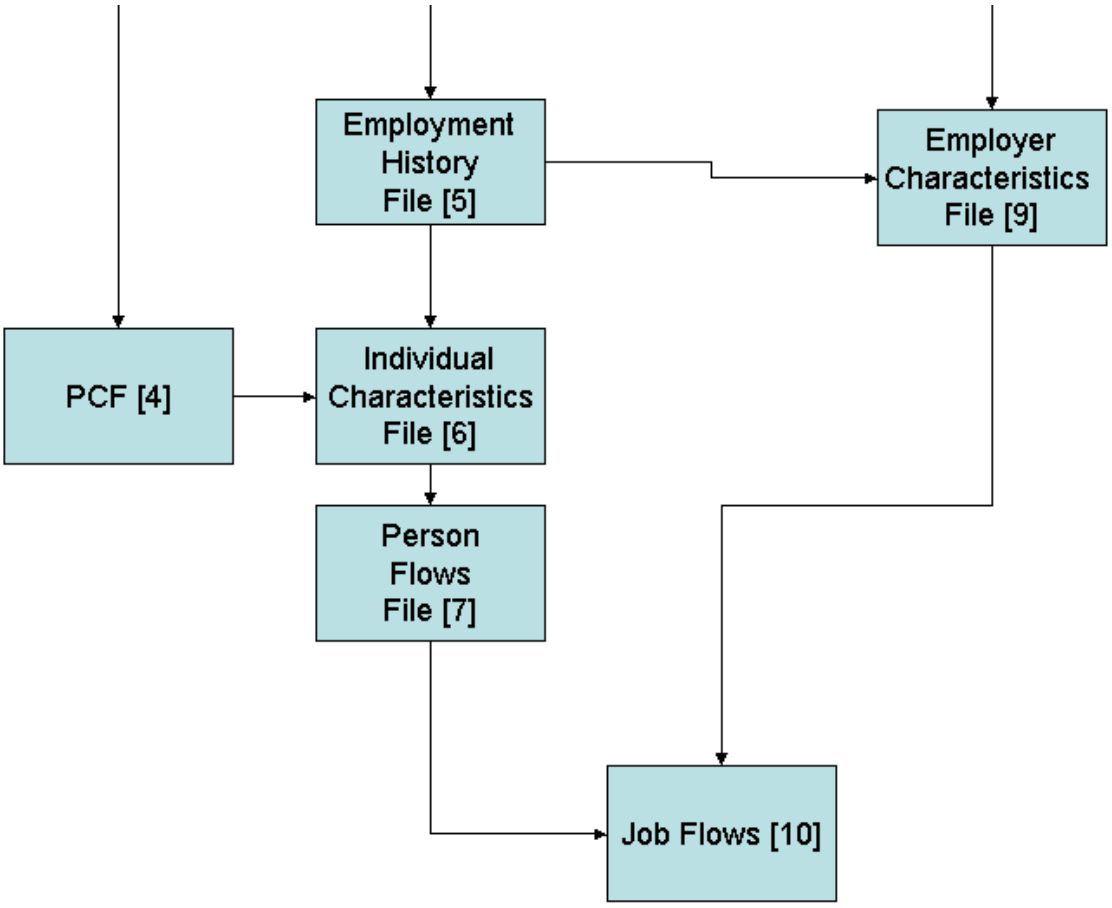

Figure A.1: Processing flowchart (cont.)

Appendix B

Glossary of abbreviations

ACS: American Community Survey

ARRS: Administrative Records Research Staff, part of the U.S. Census Bureau's PRED

ASCII: American Standard Code for Information Interchange, typically used to denote raw text files in PC or Unix environments

BLS: Bureau of Labor Statistics

CPR: Census place of residence (file)

CPS: Current Population Survey

CEW: Covered Employment and Wages. Employment statistics program run by BLS in conjunction with all states, also known as ES-202. Generally, when used in this document, refers to public-use tabulations from the CEW, as opposed to the confidential microdata received directly from the states.

DSBU02: A Compaq GS-160 8-processor machine, running OSF with 24 GB of RAM, used for processing all EDE data.

ECF: Employer Characteristics File

EDE: Employment dynamics estimates

EHF: Employment History File

ES-202: The employer-level data files received from the states, which originate from the same source files that feed the CEW, are typically referred to as ES-202 data. These are the confidential microdata.

ICF: Individual Characteristics File

IRS: Internal Revenue Service

LEHD: Longitudinal Employer-Household Dynamics, a program of the U.S. Census Bureau

MOU: Memorandum of Understanding, also called Data Use Agreement

Numident, Census: an older version of the Personal Characteristics File

Numident, SSA: Source of some of the information on the PCF

OSF: Variant of UNIX running on Compaq machines

PCF: Personal Characteristics File, also called Numident

PIK: Protected Identity Key

PIKizing: Process of assigning PIK

PRED: Planning, Research and Evaluation Division (home of ARRS)

RUN: Reporting unit number, identifies sub-SEIN units, typically an establishment, in the CEW system

SAS: A statistical software package, by SAS Inc.

SEIN: State employer identification number, an LEHD acronym for account number identifying individual employers in the state UI system

SIC: Standard Industry Classification

SIPP: Survey of Income and Program Participation

SSA: Social Security Administration

SSEL: former name of Business Register

SSN: Social Security Number, assigned by SSA

UI: Unemployment Insurance

UNIX: A multi-user, multitasking operating system developed at Bell Labs in the early 1970s. Variants include (Compaq's) OSF, run on LEHD's computers, Linux, and Solaris. All programming at LEHD is done on UNIX systems.

WIA: Workforce Investment Act

Appendix C

Data availability

Table C.1: Data availability (as of 2002-02-28)

State	File	Version	Start		End	
			Year	Quarter	Year	Quarter
CA	Employer Characteristics File	2.2	1991	1	1999	4
CA	Employment History File	2	1991	3	1999	4
CA	Individual Characteristics File–Part A	2.2	1991	3	1999	4
CA	Jobflow01 - Person-Flows File	2.2	1991	3	1999	4
CA	Jobflow02 - Redundant file	2	1991	3	1999	4
CA	Jobflow03 - SEIN level flows	2.2	1991	3	1999	4
CA	Jobflow05 - Raw Flows – County	2.2	1991	3	1999	4
CA	Jobflow05 - Raw Flows – Sic Division	2.2	1991	3	1999	4
CA	Jobflow06 - Fuzzed Flows – County	2.2	1991	3	1999	4
CA	Jobflow06 - Fuzzed Flows – Sic Division	2.2	1991	3	1999	4
CA	Jobflow07 - Fuzzed & Raked Flows – County	2.2	1991	3	1999	4
CA	Jobflow08 - Fuzzed & Raked Flows – Sic Division	2.2	1991	3	1999	4
FL	Employer Characteristics File	2.2	1992	4	1999	1
FL	Employment History File	2	1992	4	1999	4
FL	Individual Characteristics File–Part A	2.2	1992	4	1999	4
FL	Jobflow02	2	1992	4	1999	4
FL	Jobflow03	2.2	1992	4	1999	4
FL	Person-Flows File	2.2	1992	4	1999	4
FL	Raw Flows – County	2.2	1992	4	1999	4
FL	Raw Flows – Sic Division	2.2	1992	4	1999	4
FL	Fuzzed Flows – County	2.2	1992	4	1999	4
FL	Fuzzed Flows – Sic Division	2.2	1992	4	1999	4
FL	Fuzzed & Raked Flows – County	2.2	1992	4	1999	4
FL	Fuzzed & Raked Flows – Sic Division	2.2	1992	4	1999	4
IL	Employer Characteristics File	2.2				
IL	Employment History File	2.2	1990	1	2000	2
IL	Individual Characteristics File–Part A	2.2	1990	1	2000	2
IL	Jobflow03	2.2	1990	1	2000	2
IL	Person-Flows File	2.2				
IL	Fuzzed & Raked Flows – County	2	1997	1	1998	4

(cont.)

Table C.1: Data availability (as of 2002-02-28) (cont.)

State	File	Version	Start		End	
			Year	Quarter	Year	Quarter
IL	Fuzzed & Raked Flows – Sic Division	2	1990	1	1998	4
IL	Raw Flows – County	2.2	1990	1	2000	2
IL	Raw Flows – Sic Division	2.2	1990	1	2000	2
IL	Fuzzed Flows – County	2.2	1990	1	2000	2
IL	Fuzzed Flows – Sic Division	2.2	1990	1	2000	2
IL	Fuzzed & Raked Flows	2.2	1990	1	2000	2
MD	Base ES202 files		1990	1	2000	3
MD	Employer Characteristics File	2.2	1990	1	2000	3
MD	Employment History File	2	1985	2	1999	3
MD	Fuzzed & Raked Flows	2.2				
MD	Individual Characteristics File–Part A	2.2	1985	2	1999	3
MD	Jobflow03	2.2	1990	1	1999	3
MD	Person-Flows File	2.2	1990	1	1999	3
MD	Raw Flows – County	2.2	1990	1	1999	3
MD	Raw Flows – Sic Division	2.2	1990	1	1999	3
MD	Fuzzed Flows – County	2.2	1990	1	1999	3
MD	Fuzzed Flows – Sic Division	2.2	1990	1	1999	3
MD	Fuzzed & Raked Flows – County	2.2	1990	1	1999	3
MD	Fuzzed & Raked Flows – Sic Division	2.2	1990	1	1999	3
MN	Base ES202 files		1990	1	2001	1
MN	Base ES202 files	2	1998	1	2000	4
MN	Employer Characteristics File	2.2	1990	1	2001	1
MN	Employment History File	2.2	1994	3	2000	4
MN	Individual Characteristics File–Part A	2.2	1994	3	2000	4
MN	Jobflow02	2.2	1994	3	2000	4
MN	Person-Flows File	2.2	1994	3	2000	4

Appendix D

Technical details of the processing of UI wage record data

The unemployment insurance (UI) wage records are and have been received on a variety of media: CDROM and different tape formats. On these media, files may come as single file spanning all quarters of available data down to several files per quarter. Formats of the actual data on the media vary as well, from flat ASCII files that vary across vintages of data to other data formats such as Fortran or Dbase files. Formats do vary across states, and may vary within the date range of any given state.

LEHD has developed a set of SAS macros that take these diverse data and standardize them. This also occurs for the ES-202 data, but is documented separately (see Chapter I on page 169). The data analyst reading in the data configures the SAS macros in order to accomodate the varying formats. The suite of programs then reads in the data, standardizes variable names and formats, sorts into a standard sort order, and saves the file in a standardized location with a standardized name. All subsequent processing, from the ICF on, uses only these standardized data. It is this suite of procedures and programs which will be described in the next sections.

D.1 Data formats

The first step after receipt of the data is to ascertain the format the data is in. Table D.1 on page 157 describes the standard format in which data ideally is received. At the present date, 10 different formats, comprising both ASCII and Dbase data descriptions, have been used in the EDE processing. All formats are available in

/programs/projects/auxiliary/Layouts ,

with legacy layouts labeled

. &state..ui.00.0x.layout.sas

and newer standardized layouts called

ui.00.0x.layout.sas.

If it is ascertained that the data for a given state fits one of the available data descriptions, then that information will become one of the macro parameters to be used in the readin files. If the data does not fit any of the available descriptions, then a new standardized layout with sequence number *0x +1* is generated, and saved in the layout repository.

D.2 Program sequence

The following list contains the names of all programs used to process the raw data files. They are listed by location.

/data/master/ui/&state/conversions/SSN Contains state-specific macro calls. The following programs are typically found in this directory (see Section D.3 on the following page for details).

- `config&state..sas`: Configuration file containing directory positions and format definitions, read in by all SAS program files.
- `01.01.readin.sas`: Reads the data in using the appropriate .
- `02.02.readin-stats.sas`: Provides statistics and quality control on the readin files. Also creates a set of LaTeX tables that can be used in the production of a codebook.
- `03.03.uniquessn.sas`: Creates a file of unique SSNs and, if name information is on the file, a file of unique SSN-Name combinations. These files are used for integrating other Census data.
- `04.04.readin-sort.sas`: Yearly files are put into the standard sort order.
- `05.05.pointer.sas`: Creates a pointer file between the unique record identifier RID and the unique SSN-Name identifier UID.

/programs/projects/auxiliary/ Contains generalized programs (macros):

- macro_ui.readin.01.sas
- macro_ui.readin.02.sas
- macro_ui.analysis.01.sas
- macro_ui.analysis.02.sas
- macro_ui.sort.01.sas
- macro_ui.uniquessn.01.sas
- macro_ui.pointer.01.sas

/programs/projects/auxiliary/Layouts Contains layouts. As of the receipt of North Carolina data, the following format files have been defined:

Legacy layouts

- ca.ui.00.01.layout.sas
- fl.ui.00.01.layout.sas
- fl.ui.00.02.layout.sas
- md.ui.00.01.layout.sas

Standardized layouts

- ui.00.01.layout.sas
- ui.00.02.layout.sas
- ui.00.03.layout.sas
- ui.00.04.layout.sas
- ui.00.05.layout.sas

D.3 Step-by-step instructions

Step 1. If not already in existence, create a state-specific subdirectory (or ideally, a separate partition) in /data/master/ui/, using the two-letter lowercase postal abbreviation for that state. That abbreviation will be referred to elsewhere in this chapter as *&state.*.

Step 2. Determine the format of the data. Verify with existing layouts. If a layout matches, retain the number (the second digit in the layout file name) for use in the relevant macros.

Step 3. If not already in existence, create data and program subdirectories of /data/master/ui/&state.:

- ./conversions/SSN , which will contain programs that work on the original data
- ./ssn/rawdata , which will contain links to the original data (which is actually stored in ./received)
- ./ssn/sasdata , which will contain the standardized raw data
- ./conversions/UI , which will contain programs that work on the PIKized data
- ./&year/sasdata , where &year goes from the first observed year to the last available year. This will contain the final PIKized UI (and ES-202) SAS files.

Step 4. If not done yet, create symbolic links in ./ssn/rawdata according to conventions as defined in the LEHD Data standard handbook (Datastand.pdf), available in /data/doc.

Step 5. If not already in existence, copy the file *../XX/conversions/configXX.sas* from a template state directory (a previous implementation of the readin programs, preferably the latest, where XX stands for some other state abbreviation) to ./conversions. Rename it to *config&state..sas* and adjust its contents. In particular, adjust the beginning and end years and quarters of the data, since this information is used system-wide.

Step 6. If not already in existence, copy the file *../XX/conversions/SSN/configXX.sas* from a template state directory to ./conversions/SSN. Rename it to *config&state..sas* and adjust macro variables (but not SAS library names) to match the file created in the previous step. The only difference between the two files should be in the SAS library names!

Step 7. Copy the first five files listed in the above program list (serial numbers 01.01-05.05) from *../XX/conversions/SSN* to ./conversions/SSN.

Step 8. Adjust the the macro variable *&state.* in each.

Step 9. Further adjust *01.01.readin.sas*.

Tip: comment out the line starting with "%readui" by putting a "*" in front of it, and run the program. The file "macro_ui.readin.01.sas" will print out instructions to the log file. Then uncomment the line again, and adjust the parameters according to the instructions.

The salient parameters are:

- layout=aa. This determines the layout used to read in the file. This should have been determined earlier. If the layout is the standard layout as defined by ui.00.01.layout.sas, then no adjustments need be made. For any other variable, add "layout=aa" to the end of the (comma-separated) parameter list of the macro call "%readui".
- freq=xx. This parameter is related to how the data files are structured. If there is one file per quarter, then no adjustments need to be made. If there is one file per year, then use "freq=yearly", and if there is one global file, then use "freq=global".

Step 10. Further adjust *03.03.uniquessn.sas*. The parameter "name=yes" needs only be set if the data will be SSN-edited. If not, then the default value of "name=no" is sufficient, and will save significant amounts of disk space.

Step 11. No further adjustments should need to be made to the other files, but double-check.

Step 12. Run all five programs in sequence. Some of the programs can be long to run.

Tip: You can use the (LEHD-specific) command "mailsas" to have yourself sent a result code when the program has finished executing.

Tip: Programs 05.05 is optional if the data will not be SSN-edited.

Step 13. Inspect the log and list files after each run, and adjust the programs if necessary. These programs have been tested many times, but are not guaranteed to be fool-proof.

Step 14. Create a codebook in /data/doc/latex. To start, run the script "prepare-documentation.ksh". The project name should be "ui&state.".

- Edit the file templates created by this program using Xemacs, other raw text editors, or Scientific Word/Workplace.

Tip: When describing the variables, you can use, with minor modifications, the LaTeX tables created by 02.02 program.

- Create the Postscript version of the file by "compiling" the LaTeX document (command: "latex name_of_file[.tex]"). Multiple compilation runs may be necessary, and are indicated at the end of each compilation run. Do not use Scientific Word for this step.
- Create a preliminary PDF document by running "pdflatex" (syntax is othewise the same as above).
- When satisfied, use Acrobat Distiller on your PC to convert the Postscript version of the file into that final PDF version (it is slightly nicer than the one created by pdflatex).

Step 15. Update the DAF.

Step 16. Notify LEHD personnel of the availability of new or modified UI files.

Further processing depends on the necessity of a SSN edit:

- If there is an SSN edit, then the data stay on LEHD systems until the end of that processing.
- If there is no SSN edit, then the data get transferred to ARRS/PRED immediately for replacement of the SSN by the PIK.

Table D.1: Layout of raw data files

`ui.00.01.layout.sas`

Position	Short name	Description	Readin format
1	ssn	SSN	$9.
10	name_first	First name	$15.
25	name_middle	Middle Initial	$1.
26	name_last	Last name	$20.
46	state	State FIPS code	$2.
48	empr_no	Orig. State Employer ID Number	$10.
58	seinunit	State UI reporting unit	$5.
63	ein	Employer Identification Number	$9.
72	year	Year YYYY	4.
76	quarter	Quarter Q	1.
77	wage	Quarterly Earnings	10.

Appendix E

Technical details of the processing of the Census Personal Characteristics File

As part of the initial processing of state UI files, a list of unique PIKs is given to PRED and extracts from the master PCF and CPR GEO files are created. To this point, there has been no standardized way of obtaining these extracts. Sometimes LEHD has prepared the list of PIKs and sent them to PRED. Other times, PRED has prepared the list of PIKs themselves.

E.1 Files received

After the extracts have been created, two sets of files are returned to LEHD. The first set of files have the prefix CPRGEO and the second set of files have the prefix LEHDPCF. Usually there are 20 data sets for each prefix (although there have been exceptions to this general rule as well). These files are registered and then put in the

/data/master/pcfcpr/received

and the appropriate sub-directory (date received). They are then symbolically linked to

/data/master/pcfcpr/rawdata/

and are given iteration numbers. For example, the first time we received one large CPRGEO file, it was called CPRGEO_01. The next time we received extracts, they came in pieces and were mapped to CPRGEO_02_01-CPRGEO_02_20. Each time we receive extracts, the files are mapped to the next iteration number.

After the files have been registered and symbolically linked to the appropriate names, a program is run to merge the extracts to the master CPRGEO and LEHDPCF files. The master files contain a list of all PIKs ever found in any state or SIPP or CPS survey as well as the relevant geography or SSA Numident information. The master files contain flags to indicate the states and/or surveys in which the PIK appeared.

E.2 Program sequence

The merging programs call one of three possible macros:

- 00.flagcreate.sas,
- 00.flagexist.sas, and
- 00.flagmerge.sas.

These macros are written to handle three different possible formats for the arriving data. Each macros standardizes the data and creates the appropriate state and/or survey flags. The resulting data set is then merged by PIK to the master data base. A brief description of each macro follows.

00.flagcreate.sas: The assumption in this macro is that all the data come from the same state or survey and no flag exists. The user gives the macro the following parameters:

- `batch = iteration number` assigned to the files received from PRED and included in the raw data file name
- `type = CPRGEO or LEHDPCF`
- `rawdatalib = /data/master/cprpcf/rawdata/` (usually)
- `master= /data/master/cprpcf/sasdata/` (usually). Defines home of the master CPRGEO and LEHPCF files
- `piksource = 2-digit FIPS state code/ CPS/ SIPP`. Identifier for the source of the PIK.
- `merged = yes` if all 20 files have been combined into 1 file; otherwise no.

00.flagmerge.sas: In this macro, the assumption is that the data come from one or more states and surveys and that flags exist on a previously created data set which indicate the source of each PIK. The program follows the same steps as in 00.flagcreate.sas but the flag is merged on instead of being created.

00.flagexist.sas: Here, the assumption is that the flag indicating the source of each PIK is already on the file.

In all three macros, the first part ensures the existence of the source flag, either by creating or merging on the flag, or by using an already existing flag. The second part sorts the resulting data set and then merges this file onto the master CPRGEO /LEHDPCF file. All variables are kept during this merging process.

For each extract, the programs `create_cpr_master.sas` and `create_pcf_master.sas` are run. The first number on the program refers to the absolute order in which all the programs in /data/master/cpfpcf/conversions were run. The second number refers to the program number and is repeated for each extract. Program 01. is for the `cpr_master` creation and 02. is for the `pcf_master` creation.

If the extracts are sent to LEHD in a format not currently handled in one of the three macros described above, the user will have to create a new macro which creates the source flag and merges the extract onto the LEHD master files.

Appendix F

Technical details for the Employment History File

This chapter describes the Employment History File (EHF), details each of the programs necessary to create it, and discusses where to locate all input files, and where to store the output files. The purpose of this documentation is to provide enough information for someone with no prior experience–other than some familiarity with running SAS in a UNIX environment as well as a basic knowledge of SAS macros—to process the EHF. Such processing will likely occur quite frequently as current state partners send updates and new state partnerships are formed. Hence, the information below should be used as a primer to help guide the analyst charged with creating the EHF. It should be detailed enough to provide the analyst with sufficient expertise to implement minor modifications to the programming sequence should they become necessary.

F.1 Overview

The EHF contains earnings information at the Protected Identity Key (PIK) - State Employer Identification Number (SEIN)-Year level. Thus, one record exists for each individual-employer-year combination. Earnings are recorded for each of the four quarters in the year as well as for the entire year. All of this information is generated solely from the state Unemployment Insurance (UI) wage records shipped to LEHD from its state partners. No additional information on individuals or employers from other data sources is ever included.

At least one EHF file exists for each state the LEHD Program has received UI records from. Over time, states send updates (additional years of data), and when this occurs the EHF is reprocessed so as to reflect this. As such, several EHFs may exist for a given state. Along with the Individual Characteristics File (ICF) and the Employer Characteristics File (ECF), the EHF represents one of the most important and frequently used data files at LEHD. In particular, it is the key input file to the Employment Dynamics Estimates (EDE) generated by LEHD for its state partners.

F.2 Program files and notation

Location of program files

The base directory for all EHF-related programs is

/programs/projects/Employment_history/

The most current version of all program files necessary to construct the EHF can be found in ./jobstream200201230. Should changes ever be made to streamline or enhance this sequence, the resulting program files should be stored in a similar directory in the base directory, which reflects the date of the changes.

The programs in ./jobstream200201230 serve as a reference for the user and should never be run in this location. Instead, the user should create a new directory in the base directory that reflects the state of interest and the most recent

year for which data are available for the state (for instance, ./MN2000) and then copy the program files there.

Notation

The following notation is used for macro variables, and should be familiar to users familiar with SAS macros at LEHD:

- "&st" refers to the two letter (postal) state abbreviation, in lower case (e.g. ca, mn, fl, md, tx)
- "&year" refers to the 4 digit year, e.g. "1999"

F.3 Program Sequence

Prior to running the job sequence, previous versions of the EHF should be backed up by renaming. The following naming convention should be used: emphis&st_&year&q, where &year refers to the last four digit year (for instance, 2001) and &q refers to the last one digit quarter (for instance, q4) for which data are available on the previous version. The purpose of this is to keep available previous versions. Downstream users should always access the most recent version.

To create the EHF the following jobs must be run sequentially:

Step 1. ui&st-work-history-01.sas

This program reads in the raw UI data files (one file for each year of available data), sorts them by *PIK*, *SEIN*, *YEAR*, *QUARTER*, and then interleaves them into a single (often very large) data file, called ui&st.01. The two other variables on these input files are *EIN* and *WAGE*. In addition, an earnings variable based on the *WAGE* variable and rounded to the nearest dollar is created. Each input files &st&year is stored in its own directory:

/data/master/ui/&st/&year/sasdata.

In order to run the program successfully, the user must first determine how many years of data are available for the state of interest and manually edit ui&st-work-history-01.sas to reflect the correct number (and names) of all input files. The program then calls all subsequent jobs listed below. Therefore, it is very important that all edits to subsequent programs are completed BEFORE running ui&st-work-history01.sas. If the user is uncomfortable with this option, she may comment out the code telling SAS to do this and process each subsequent program manually. The output file is stored in a user defined temporary workspace. Usually, this is one of the 12 /saswork directories on DSBU02. The user needs to find a directory which is relatively empty and edit the program so that the libname, "working" points to it.

TIP: Use the "df –k" command at the UNIX prompt

Step 2. ui&st-work-history-02.sas

This program sums the earnings (restricted to be positive) of all employees at each *SEIN* for each year and quarter. The input file is ui&st.01, stored in the user defined temporary workspace. The output file, sein_employment_&st, is written to /data/master/Employer/sasdata/uitotals_old. [1]

Step 3. ui&st-work-history-03.sas

This program creates all remaining variables in the EHF: quarterly earnings (4 variables, one for each quarter, denoted *earn1- earn4*), annual earnings (the sum of *earn1-earn4*, denoted *earn_ann*). All of these variables as well as *PIK*, *SEIN*, and *YEAR* are subsequently labeled. Finally, the variable *source* is created which assigns the state FIPS code (stored as a character variable). For instance the FIPS code for CA is "06." The input file to this entire process is ui&st.01.sas7bdat, which is stored in the user-defined temporary workspace. The output file, similarly stored, is ui&st.03.sas7bdat.

[1] In the future, the creation of this file is subsumed into the ECF sequence, which will reference the final EHF.

Step 4. ui&st-work-history-04.sas

This file creates the EHF and places it in /data/master/Employment_history/sasdata. The input file, ui&st.03 is sorted by *PIK*, *SEIN*, and *YEAR* and then copied from the user defined temporary workspace (&working) to its permanent location: /data/master/Employment_history/sasdata. The file is subsequently renamed: emphis&st.sas7bdat. This file is the EHF for the particular state being analyzed.

Step 5. ui&st-work-history-05.sas

This file creates the indices for the EHF in /data/master/Employment_history/sasdata based on the following combinations of variables:

- *PIK YEAR SEIN*
- *PIK SEIN YEAR*
- *SEIN YEAR*

Indices help make data processing more convenient for users of the EHF as they eliminate the need to subsequently sort the EHF along any of dimensions just listed. Indexation of the EHF results in the creation of an additional file emphis&st.sas7bndx also stored in /data/master/Employment_history/sasdata.

F.4 Notes on processing

A few final notes on the EHF are necessary in order to ensure the user knows enough to run the entire program sequence correctly.

Note 1. First, and most importantly, the programs ui&st-work-history-02.sas – ui&st-work-history-05.sas are actually very short programs in which information such as the state and the location of the temporary working space needs to be entered. For some programs, the date specific extension to the name of the final EHF file (see the discussion for ui&st-work-history-04 above) must also be entered. Each of these short programs calls a corresponding program in which the steps described above are actually coded. These programs are called state-work-history-02.sas – state-work-history-05.sas. These programs have been written generically for all states in order to save editing time by the user. As such, all references to states and directories have been "macroized" and the macros are what get defined in ui&st-work-history-02.sas – ui&st-work-history-05.sas.

Note 2. As stated above, at the end of ui&st-work-history-01.sas all subsequent programs in the sequence are run automatically. As such, it is imperative that the user completes all edits to all programs in advance of running ui&st-work-history01.sas. If the user is uncomfortable with this option, she may comment out the code telling SAS do this and process each subsequent program manually.

Note 3. Following the completion of each job in the sequence, the user should check the .log file to ensure that no errors occurred. Since this sequence has been run many times before, it is highly likely that any errors that did occur are the result of the user failing to correctly edit the programs to reflect the appropriate state, date range, temporary work directory, et cetera. If problems persist, the user should contact a more experienced member of the LEHD team.

Note 4. Once all programs have run successfully, two tasks remain. First, the user should go to the directory she specified as temporary workspace and delete all files. This will help free up disk space, which is often a scarce commodity on DSBU02.

Note 5. Second, the user should update the Data availability file (DAF) stored in /data/doc/data_availability as daf.xls. More specifically, the user should note the creation of the EHF as well as the person flows file, jobflow01_pik, and fill in the appropriate information for all fields in the DAF.

Appendix G

Technical details for the Individual Characteristics File

G.1 Overview

This chapter describes how to process the ICF and how to verify that the correct output is being produced. The purpose of the documentation is to provide enough guidelines for someone with no prior experience to process the ICF version 2.2[1] in the absence of the normally responsible persons. The documentation also contains information, although not in great detail, on what each of the included programs in the program sequence does. This information should hopefully be sufficient to at least direct the reader to where in the program sequence any modifications should be applied if such should become necessary.

G.2 Versions of the ICF

Up to three different versions of the ICF coexist for each of the states that have been processed. The differences between version 2.0 and version 2.2 are that the latter rely on updated Numident data, the latest available UI data, and geographical data from the STARs system. However, no further processing of the geographical data takes place in version 2.2. Version 3.0 uses the very same input data as version 2.2 does to further refine the geographical information on the ICF. Thus, the information contained in version 2.2 is a strict subset of the information contained in version 3.0 and, hence, could be viewed as an intermediate product of version 3.0 . As such, version 2.2 is to be deleted once version 3.0 has been finalized and it has been verified that version 2.2 data indeed is a strict subset of version 3.0. Version 2.2 is located in ”/data/master/Individual/v2.2/sasdata/” and should be accessible from ”/data/master/Individual/current/sasdata/”, if it is the most current version of the ICF available. To understand why version 2.2 is a necessary intermediate product we need to understand what the input data are of each version and how the ICF is related to the other products of LEHD.

G.3 Input data

Version 2.2 uses the Employment History File as one of its inputs and the processing of version 2.2 can normally be initiated as soon as the EHF exists. (Before processing the CPR and the STARs data must also have been updated to include the specific state, but that can be done independently of the status of EHF.) In addition, version 3.0 uses the Employer Characteristics File as one of its inputs. However, the ECF uses the ICF version 2.2 as one of its inputs and, hence, version 2.2 is a necessary intermediate product.

[1] ICF version 2.2 is used in EDE versions 2.2 and 2.3.

G.4 Program sequence

The generic program '00.00.icfv2.2.sas' is located in '/programs/projects/icf/icfv2.2/programs'. The program is completely state-independent and all intermediate output files are deleted as soon as possible in the program. It uses '/saswork4' as its working directory, outputs 'indmast&state' and 'implicates&state' to '/data/working/individual/ui&state. rev2/', and creates an index for 'pik' in 'indmast&state'. This program in turn includes several other programs described briefly later on. Unless any modifications are needed this program (or any if its underlying programs) should not be changed.

The following is a step-by-step list of what needs to be done in order to create the ICF version 2.2 for any state:

Step 1. Create a directory in /programs/projects/icf/icfv2.2/&state/ and copy the program '01.01.icfv2.2.sas' from '/programs/projects/icf/icfv2.2/programs' to that directory. This is the program that contains all state-specific parameters and which calls upon '00.00.icfv2.2.sas' when executed. Only the two letter state abbreviation `&state` needs to be set, all other parameters are parsed from global configuration files, in particular

/data/master/ui/&state/conversions/config&state.sas

However, visual verification of the time span defined in that file should be done with the EHF and the Data Availability File (daf.xls in /data/doc).

Step 2. Make sure enough space is available on '/saswork4' and '/data/master'. If there is not (i.e. if '/saswork4/' has less than about 20 percent available space), it's probably time to erase some temporary files. If that is not possible change the libname 'mywork' in '00.00.icfv2.2.sas' to another directory with enough space, after having consulted the owner of the alternative saswork directory specified.

Step 3. Before executing '01.01.icfv2.2.sas' you probably want to make sure that global macros and libnames are updated in '00.00.icfv2.2.sas'.

Step 4. Execute '01.01.icfv2.2.sas'. (For California the cpu-time is about 6 hours and for Minnesota about 1 hour.)

Step 5. Verify that the output is correct in the log and list file of '01.01.icfv2.2.sas' (see Section G.6 on page 167).

Step 6. Create a symbolic link in "/data/master/Individual/current/sasdata/" between "indmast&state..sas7bdat" and "indmast&state..sas7bndx, on the on hand, and "/data/master/Indiviudual/v2.2/sasdata/indmast&state..sas7bdat" and "/data/master/Indiviudual/v2.2/sasdata/indmast&state..sas7bndx", on the other hand, assuming that v2.2 is the most current version of the ICF available for that state.

Step 7. Update 'daf.xls' to reflect the fact that the ICF version 2.2 exists.

Step 8. Notify the rest of the LEHD by e-mail that the ICF version 2.2 is done.

G.5 Description of sub-programs

The following is a description of sub-programs called from the main program '00.00.icfv2.2.sas'. All of the list files associated with each of the included programs have "Proc Contents" printed in them to provide documentation on the exact names and formats of variables.

00.01.icfv2.2.sas This program reads in the Employment History File and counts the number of unique SEINs with positive earnings for each individual in each year and year/quarter. The resulting data set, persum01.sas7bdat contains the variables

- *PIK*,
- *SY&uifirstyear.ui&uifirstquarter. – SY&uilastyear.ui&uilastquarter.*,
- *SPTNMF&uifirstyear. – SPTNMF&uilastyear.*,
- *source* (=FIPS code for &state.), and

- *sourcetp* (=UI).

There is one observation per individual who ever worked in &state. during the time period &uifirstyear. – &uilastyear.. When there were no employers in a particular quarter, the employer count variable, *SY&year.&quarter.*, is set to zero. When the quarter was out of range (pre-&uifirstyear. and post-&uilastyear.), the employer count variables are set to missing. The range of *SY&year.&quarter.* is 1985 quarter 1 to 2001 quarter 4. (The range is defined in '00.00.icfv2.2.sas'.)

00.02.icfv2.2.sas This program reads in raw numident and STAR data and creates date of birth and date of death sas-date format variables. Race, gender, place of birth, and citizenship variables are labeled and the data is sorted by *PIK* in preparation for the merge with the UI data. The resulting data set is persum02.sas7bdat.

00.03.icfv2.2.sas This program merges persum01.sas7bdat and persum02.sas7bdat by *PIK*. The resulting file is persum03.sas7bdat.

00.04.icfv2.2.sas This program matches on CPS household and person ID variables. The PIK/CPSID crosswalk

/data/working/individual/cpsuicw2.ssd04

was created by a series of programs in /programs/projects/cps/linkuimd. These programs take the raw crosswalks, standardize them across years, and deal with duplicates. Please see /programs/projects/cps/linkuimd/jobsequence.txt for details. This crosswalk is merged with persum03.sas7bdat to form linkcps1.sas7bdat. Variables added from crosswalk include *hid1*, *pposold1*, *yearcps1* and various indicators of duplicates. Since numerous people are in the March CPS twice, variables *hid2*, *pposold2*, and *yearcps2* also exist.

00.05.icfv2.2.sas This program matches on SIPP person id variables. The PIK/SIPPID crosswalk

/data/working/individual/sipp/xwalk/iu-pu-pikxwallyears_final.sas7bdat

was created by a separate series of programs in /programs/projects/sipp/xwalk. These programs standardize across years and deal with duplicates. Variables added from the crosswalk include *intid* (internal SIPP ID), panel year in the SIPP, and various indicators of duplicates. ntid is a 14 character (19 character for 1996) identifier which is created by concatenating *pp_psu pp_seg pp_ser pp_entry pp_pnum*. This crosswalk is merged with linkcps1.sas7bdat to form linksip1.sas7bdat. Variables are then re-named and labeled, extraneous variables are dropped, and the resulting file, persum04.sas7bdat is indexed by *PIK*.

00.06.icfv2.2.sas The output data, cps&state.sas7bdat, contains the variables IK, *a_age*, *a_sex* and *yearcps* from the CPS for those individuals that match to the CPS.

00.07.icfv2.2.sas This program uses the employment history file

/data/master/Employment_history/sasdata/emphis&state..sas7bdat

as its input and calculates yearly earnings totals for each *PIK* by summing over all the jobs in a given year. Individuals who never have positive earnings are dropped. The resulting data set is impute01.sas7bdat.

00.08.icfv2.2.sas This program merges impute01.sas7bdat and persum4.sas7bdat to form impute02.sas7bdat. This program prepares variables to be used in the age and gender impute, calculates age at first job (first job is defined as the first time an individual appears in the UI wage records), and edits the *dob* variable:

- Workers who are 101 years or older have 100 years added to their birth year and 100 years subtracted from their age.
- Workers ages 0 or younger and 90 or older (but still less than 101) have their *dob* and *age* variables set to missing.

Then workers are assigned to one of nine age categories: 1-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89. Workers ages 14-89 or with missing ages are output to impute148902.sas7bdat. All workers regardless of age are output to imputeall02.sas7bdat. The first data set will be used in the logit model which predicts age category. The second data set will be used in the logit model which predicts gender. The program finishes by doing "proc freqs" to get the distribution of ages within each age category and outputing each distribution to a data set called freqagecatx.sas7bdat.

00.09.icfv2.2.sas This file takes the data sets freqagecat1.sas7bdat-freqagecat8.sas7bdat, appends them all, and then creates a data set which is one observation long and contains an array, *agecprob*{8,10}, which contains the probabilities of being less than or equal to a certain age within each agecategory. The resulting data set, impute02freq.sas7bdat, will be used in the age impute in impute05b.sas.

00.10.icfv2.2.sas This program uses impute148902.sas7bdat to run a multinomial logit model which predicts the probability of an individual being in each of the 8 age categories. Right-hand side variables are indicators for whether an individual had a job in a given year and total earnings and total earnings squared for each year. Results are output to impute03a.sas7bdat which contains 7 observations per *PIK*. Each observation contains the variable *agecathat* which is the probability that the person falls into a given age group or younger.

00.11.icfv2.2.sas This program takes the data set impute03a.sas7bdat and collapses it into a data set with only one observation per *PIK*. At the same time it creates an array of the cumulative probabilities, *cprob1- cprob7*, to be used in the age impute.

00.12.icfv2.2.sas This program uses imputeall02.sas7bdat to run a logit model where the probability of being male is predicted. The output data set, impute04.sas7bdat, contains all the original variables plus *malehat* - the probability of being male.

00.13.icfv2.2.sas This file merges impute04.sas7bdat, impute03b.sas7bdat, and cps&state.sas7bdat. The output data set is called impute05a.sas7bdat.

00.14.icfv2.2.sas This program uses impute05a.sas7bdat to finally impute age and gender where it is missing. First impute02freq.sas7bdat is merged on and then four arrays of random numbers are generated for each individual. *agecatrandom* will be used to assign the age category, *agerandom* will be used to assign the age, *dayrandom* will be used to assign the day of the year for the dob variable, and *x* will be used to assign gender. The file has 9 loops to cover the 9 possibilities:

1. nothing missing
2. *dob* not missing/*sex* from CPS
3. *dob* not missing/*sex* missing,
4. *dob* from CPS/*sex* not missing,
5. *dob* from CPS/*sex* from CPS,
6. *dob* from CPS/*sex* missing,
7. *dob* missing/*sex* not missing,
8. *dob* missing/*sex* from CPS
9. *dob* missing/*sex* missing.

When *age* comes from the CPS, *birthyear* is calculated, then *age* at first job, and finally using the *dayrandom* variable, a random day of the year is assigned and the *dob* variable is created. When *age* is imputed completely, age category is imputed first by comparing *agecatrandom* to the values of *cprob1- cprob7* for that individual. Then age within the category *m* is imputed by comparing *agerandom* to *agecprob*{*m,1*}-*agecprob*{m,9}. Finally day of the year is imputed using *dayrandom*, and *dob* is created. When *sex* is missing, the value is assigned by comparing *x* to *malehat*. The imputing is done 10 times for each missing value, creating 10 'implicates' for individuals with missing values. Implicate 1 is output to impute05b.sas7bdat along with observations with no missing values. The other 9 implicates are output to implicates.sas7bdat.

00.15.icfv2.2.sas This program merges impute05b.sas7bdat and persum4.sas7bdat to create the final master file. This is necessary because most of the variables were dropped from persum4 at the beginning of the imputing process to keep the data sets small. The output file, indmast&state..sas7bdat is written to "/data/master/Individual/v2.2/sasdata/".

G.6 Verification and quality control

There is an extensive list-file associated with '01.01.icfv2.2.sas'. Every output is included for a reason, so make sure to understand how to read the output. I'm afraid it is hard to be specific and that some experience is necessary. However, looking at old list and log files can serve as a partial substitute for experience.

- Check the number of observations. It should coincide with the number of unique 'piks' in the UI data, and in the EHF.
- The time-span of data should coincide with the dimensions of the EHF (located in '/data/master/Employment history/sasdata'), but double check with '/data/doc/daf.xls'. It is also defined in '/data/master/ui/&state/config&state'. If it does not coincide, notify the person processing the EHF.
- Check for any error messages.

Appendix H

Technical details for the Person Flows File

This section describes the one program that creates the Person Flows File (PFF). Since it is intricately linked to both the EHF (Chapter F on page 160) and the ECF (Chapter J on page 171), please revise the descriptions of that processing as well. In particular, this file used to be part of the EHF sequence, so all notes and tips in Section F.4 on page 162 apply to this file as well.

Step 1. ui&st-work-history-06

This program is virtually identical to the first program in the EDE v2.2 sequence, jobflow01.sas, and has in fact replaced it in the most current version of processing. The only difference is the output file contains the variable PIK in addition to other *PIK-SEIN*-level job flow statistics. The program combines information from the Individual Characteritics File (ICF) as well as from the EHF. More specifically, it reads in records from the employment history file and attaches demographics from the ICF. Employment and earnings histories are created for each individual which are subsequently used to create the *PIK-SEIN*-level job flow statistics. The output file is the "Person Flows File," called jobflow01_pik. Depending on the amount of space available, it should be stored in either /data/working5/person_flows/&st or /data/working6/person_flows/&st.

TIP: The user should first check to see whether these directories have been created. In order for ui&st-work-history-06.sas to run correctly, the user must first edit the program macrolist.sas!

This program has been written in a very generic manner, meaning the user must select the appropriate state of interest, enter an appropriate temporary working directory, enter the appropriate person_flows directory. The correct locations for the EHF and ICF must also be entered. The location of the ICF for each state can be found in /data/doc/data_availability/daf.xls.

Appendix I

Technical details for the receipt of ES-202 data

I.1 Input Files

The ES 202 data from the states is the primary input to the ECF file creation process. The data is (typically) received as a custom extract for LEHD, based on the standard ES-202 file format as sent to BLS.

I.2 Reading the ES 202 files

Reading the data has been the hardest part of the ECF creation, as they have historically come in widely differing formats. As the files are received in a more standard format this process should become easier. Files received from the states are checked in and placed in

/data/master/ui/SS/received/YYYY-MM-DD.

where *YYYY-MM-DD* is the date the files were received at Census, and *SS* is the two-letter postal abbreviation for the state.

Files are kept as is (except for compression). In order to standardize processing, and to manage file updates, the directory

/data/master/ui/SS/rawdata

contains symbolic links[1] to the actual files in *../received*. These symbolic links have a standard format detailed in the LEHD Data standards,[2] and always point to the most recent update:

`[ss][project letters][yyyy][q].dat.[compression extension]`

[1] The unix command 'ln' can be used to create a symbolic link. For instance, the following was used to create a link in the North Carolina rawdata directory:

ln -s /data/ui/nc/received/2001-11-30/Y1997.gz /data/master/ui/rawdata/nces19971.dat.gz

Or a simple script at the command line will allow you to create symbolic links for all the data.

```
dsbu02 :=>    date=2001-11-30
dsbu02 :=>    year=1990
dsbu02 :=>    while [[ $year -le 2000 ]]
>             do
>             ln -s ../../received/$date/$year.gz nces$year1.dat.gz
>             let year+=1
>             done
```

[2] See /data/doc/Datastand.pdf

where [ss] is the two-character state postal abbreviation and [project letters] is the abbreviated project name, [yyyy] is a Y2K compliant year numeral, [q] is a single digit indicating the calendar year quarter. All links have the .dat extension, followed by a [compression extension] that indicates to readin programs which applications to use to extract the programs. In our example, $< nc >$ is the state abbreviation, $< es >$ is the projects letters, $< 1997 >$ is the year and $< 1 >$ is the quarter 1, $< gz >$ indicates that the compressed archive contains only a single file, rather than multiple files contained in a $< zip >$ archive.

Next, the layout needs to be determined. The degree of difficulty of this task depends on the extent of the documentation accompanying the data. A repository of layouts can be found in ***/programs/projects/auxiliary/Layouts***. If the layout of the state does not match one of the formats in the repository, then a new layout is created, and added to the repository.[3]

I.3 Program sequence

All programs should be patterned on the the latest version of the readin sequence. The DAF might give some hints, as might a directory listing, about the most current readin. SAS files are copied from the *conversions/ES* subdirectory of */data/master/ui/SS*. Normally, they require very little modification. Each of the programs passes arguments to a standard macro. A help text is printed when including the program file that defines the macro (the *%include* statement).

Step 1. Modify/set up *configSS.sas*, where *SS* again is a placeholder for the postal state abbreviation. Only the lines defininning the state abbreviation as well as the time spans covered by the data should need to be modified here (but see also Section D on page 154). In particular, the existence of the directories referenced in the libname statements should be verified.

Step 2. Modify and run ***01.01.es-readin.sas***. This program reads the data from ASCII into SAS format. Verify its contents, modify dates and state abbreviation appropriately, and run. These programs can take very long.

Step 3. Modify and run ***02.02.es-stats.sas***. This program creates statistics for quality assurance and documentation.

I.4 Output files

The data is stored in file locations of the format

/data/master/ui/SS/YYYY/SSesYYYY.sas7bdat

where SS= a two letter state abbreviation, YYYY= a 4 digit year, all in lower case.

[3]The default layout is called $< es.00.01.layout.sas >$. Subsequent modifications are numbered $< es.00.02.layout.sas >$, $< es.00.03.layout.sas >$, etc. To modify the standard layout, copy that file (es.00.01.layout.sas) to the next free sequence number and adjust accordingly. Make a comment at the top of the file what state you are adapting it to.

Appendix J

Technical details for the Employer Characteristics File

J.1 Overview of ECF Version 2

The ECF version 2 is an SEIN YEAR QUARTER based-file containing geography, industry, payroll, and employment. Although a multi-unit firm may contain multiple records in the data as received from the state, all information is consolidated into one SEIN level record.

The consolidation process varies depending on the type of information present. The industry (SIC), county, and EIN variables are treated differently than payroll and employment. For single unit firms, industry, county, and EIN remain as coded, but for multi-unit firms, the firm receives the modal value of its establishments. Payroll and employment at the SEIN level come from two sources. The resulting variables on the ECF are simple sums of the values at each establishment for the ES-202 data and sums of the worker information from the UI.

While there are known problems with the data, except for Illinois (Karen spent time with George Putnam "improving" the data we receive from Illinois), very little has yet been done to address these issues.

J.2 Imputation of county and SIC codes

County and SIC codes are crucial for the job flow estimates and have received the most attention. Fortunately, missing data is a relatively small problem for these variables and county and SIC are likely to change relatively slowly over time. Therefore, we use the closest available quarter to fill missing values. Table J.1 shows the results. SIC codes are very rarely missing and if they are, then a value from another quarter is typically available. The county information is harder to fill from another quarter. If county is missing it generally is missing for the whole period we observe the firm.

Table J.1: Missing data summary on ECF

	SIC		COUNTY	
State	Before	After	Before	After
California	2.46	0.57	3.30	1.72
Florida	2.93	1.37	3.08	3.00
Illinois	1.30	0.27	4.82	3.24
Maryland	2.90	1.34	8.28	6.46

For Illinois, various checks on EIN quality have been completed. Illinois is unique in having two sources for EINs. There is an EIN on both the UI and ES-202 data. Comparisons were done between the two EIN sources on two

dimensions. First, are the EINs valid and if so do they match? The first two digits of an EIN represent an IRS region and only certain numbers are permissible (Note: All EIN's on the Business Register meet this minimal criterion. On the Illinois ES-202 data this inconsistency affects less than one percent of the SEINs). In the second step, the valid EINs that differ in the UI and ES-202 data are matched against the Business Register. About 85% of the EINs from the UI data match to the Business Register while only 43% of the EINs from the ES-202 data match. we keep the EIN on the ECF that matches the Business Register.

Based on the above information, George Putnam initiated a clean up of the Illinois files, replacing the ES-202 EIN with the UI EIN. We would have preferred having both EINs, but there are only about 4000 SEIN YEAR QUARTER records over the entire period where the EIN from the ES-202 was found on the Business Register and the UI EIN was not found.

The final step in version 2 is to generate the fuzz factors used to disclosure-proof the job flows. Each SEIN is assigned a fuzz factor that remains constant for the life of the firm. The fuzz factor is drawn from either a triangle (ramp) or beta distribution. The size of the fuzz factor is conditional on the number of other firms in the same county and SIC division. Firms in a relatively large county with many other firms in the same industry receive lower fuzz factors. Section 8.2 on page 126 provides more detail and the exact specifications. The exact parameters used are confidential.

J.3 Overview of program sequence

First we read in the data from the yearly ES-202 files and stack them. General and state specific consistency checks are then performed. The COUNTY, NAICS, SIC, and EIN data are checked for invalid values and duplicate records are removed.

The ES-202 data contains a "master" record for multi-unit firms that must be removed. Any information in the master record is preserved if the data is not available in the establishment records (We initially allocate the data equally to each establishment). Various inconsistencies in the data are also dealt with.

The UI data is integrated with the ES-202 data and totals are calculated at the SEIN YEAR QUARTER level. Using both UI and ES-202 data we create a "best" series of variables for payroll and employment. The allocation process implemented above (master to establishments) does not incorporate any information on the structure of the firm. A flat prior is used in the allocation process (each establishment is assumed to have equal employment and payroll). We improve on this by examining firms with allocated data that previously reported as a multi-unit. We then use the structure of their reports from a previous quarter to allocate payroll and employment. The new records are integrated back into the data, hopefully improving longitudinal consistency.

At this point the SEIN YEAR QUARTER SEINUNIT dataset is almost complete. We create the SEIN YEAR QUARTER data using this data.

The modal COUNTY, SIC and NAICS are calculated (both establishment and employment) weighted. The COUNTY, SIC, NAICS, and EIN data are transformed from long to wide format for each SEIN. We use this dataset to fill missing values in these variables with information from other periods for the same firm.

The final step is to apply fuzz factors to each dataset. The fuzz factor process is done separately for the SEIN and the SEINUNIT data. Once this is completed the datasets are written to their final location.

This series of programs integrates the creation of ECF version 3 (sein year quarter seinunit) into the creation of the ECF version 2 (sein year quarter). The version 2 file is now created by aggregating information in the version 3 file. This insures that the two files are always consistent with each other.

J.4 Directory Structure

- Programs are in the /data/master/Employer/conversions subdirectory
- Data is located in the /data/master/Employer/sasdata subdirectory

The programs and data files are grouped into three major areas; proto1, proto2, and current

Proto1 – Our first efforts at building an ECF. Each state has a different set of programs depending on the level of development at the time the state's data was received. There are many valuable programs that investigate ES-202 data in the address, duprecs, and multiunits subdirectories. The run_expansion subdirectories contain our first attempts at version 3.0 (SEINUNIT based file).

Proto2 – Our first attempt at combining all the different versions of the ECF programs into one consistent set of code that is used for all states. This set of code is generally known as version 2.2 (also added employment weighted SIC and COUNTY).

Current – Represents the best production quality version of the ECF. If new versions are developed, they would generally be placed in proto3 until they are ready to be moved to current. Once development is complete, the old version in current is moved to proto3 and the new production files are placed in current. The sein sub-directory contains the SEIN YEAR QUARTER files. The seinunit sub-directory contains the SEIN YEAR QUARTER SEINUNIT files.

Other data directories

Uitotals – SEIN YEAR QUARTER employment and payroll totals from the job flows sequence (PFF), see Appendix H on page 168. (Preliminary)

Uitotals_old – SEIN YEAR QUARTER employment and payroll totals from the creation of the EHF. Used in proto1, proto2, and the current version as of this document's creation. Eventually programs should use the files in the uitotals directory.

J.5 Input Files

The ES-202 data from the states is the primary input to the ECF file creation process. These data are stored in

/data/master/ui/&state./YYYY/&state.esYYYY.sas7bdat

where &state. is the two-letter state postal abbreviation (lower-case) and YYYY= a 4 digit year. See Appendix I on page 169 for details on how those files are created. A supplementary input is an intermediate file from the creatoin of the EHF (see Appendix F on page 160). A file for each state is placed in

/data/master/Employer/sasdata/uitotals_old/sein_employment_&state..sas7bdat,

containing payroll and employment by SEIN for all of the firms in the UI. By combining data from both the UI and the ES-202, a data set is created containing all of the known firms in the state at various points in time.

J.6 Files Created

ecf_stacked_01.sas7bdat: created by created by 01_read_all.sas. Stacked data from the ES-202. Contains master and subunits

count_data_02.sas7bdat: created by 02_num_records.sas. adds number of record counts and data availability flags to ecf_stacked_01.sas7bdat

no_master03sas7bdat: created by 03_rm_master.sas. Removes the master record. File is now in the form SEIN YEAR QUARTER SEINUIT

sein_totals_04.sas7bdat: created by 04_sein_totals.sas. SEIN YEAR QUARTER totals of SEINUNIT payroll and employment

sein_list_ui_04.sas7bdat: created by 04_sein_totals.sas. A list of the SEIN's that ever appear on the UI

sein_list_202_04.sas7bdat: created by 04_sein_totals.sas. A list of the SEIN's that ever appear on the 202.

seinunit_202_UI_04.sas7bdat: created by 04_sein_totals.sas. SEIN YEAR QUARTER SEINUNIT file containing payroll and employment totals from both the UI and 202. If an observation is only from the UI then there is no SEINUNIT information.

best_vars_05.sas7bdat: created by 05_best_vars.sas. Improved payroll and employment measures at the SEIN YEAR QUARTER SEINUNIT level.

special_handle_list_06.sas7bdat: created by 06_select_records.sas. SEIN YEAR QUARTER records that will have SEINUNIT record structure imputed

alldata_06.sas7bdat: created by 06_select_records.sas. A copy of best_vars_05.sas7bdat with several new variables added.

special_handle_history_06.sas7bdat: created by 06_select_records.sas. SEIN YEAR QUARTER SEINUNIT dataset for each SEIN that has a record in special_handle_list_06.sas7bdat. The complete history of the SEIN is included in this dataset.

special_handle_07.sas7bdat: created by 07_special_handle.sas. The new record structure created for records in special_handle_list_06.sas7bdat by using information from another quarter. The number of SEIN YEAR QUARTER records is unchanged.

ss_employer_char_unit.sas7bdat: created by 08_distribute.sas. The final version of the SEINUNIT level file without the fuzz factors.

mode_sic_naics_county_09.sas7bdat: created by 09_mode_sic_naics_county.sas. SEIN YEAR QUARTER file with modal county, SIC, and NAICS.

sein_wide_10.sas7bdat: created by 10_sein_wide.sas. SEIN level file with information on county, SIC, NAICS, and EIN for each SEIN over time.

ss_employer_char.sas7bdat: created by 11_sein_yq_chars.sas. The almost final version of the SEIN YEAR QUARTER file.

cnty_sic_mlist_sein.sas7bdat: The table of number of SEIN's in a given county / SIC division cell.

cnty_sic_mlist_seinunit.sas7bdat: The table of number of SEINUNIT's in a given county / SIC division cell.

J.7 Variables Created

01_read_all.sas

Sein_bad

0 = SEIN contains only characters 0-9
1 = SEIN contains a character outside the above range

Ein_bad

0 = EIN contains only characters 0-9
1 = EIN contains a character outside the above range

Valid_ein

0 = first 2 digits of EIN do not represent a valid IRS Revenue district code
1 = first 2 digits are valid

Ein_defect

0 = no defect found
1 = EIN is all nines or all zeros

2 = ein_bad=1, EIN contains characters outside the range 0-9
3 = EIN is a 7 digit or less number. An EIN must be at least eight characters
4 = valid_ein=0, the first two digits of the EIN do not represent a valid IRS Revenue district code

02_num_records.sas

NUM_RECORDS

1 -N = the number of records for each SEIN in a given year and quarter

All_miss_(pay,emp1,emp2,emp3,sic,county)

0 = at least one or more subunits has data
1 = all subunits have missing data

03_rm_master.sas

num_estabs

1 -N = the number of establishments for each SEIN in a given year and quarter

multi_unit

0 = not a multi unit
1 = multi unit

impute_(wage,emp1,emp2,emp3,sic,county)

0 = data not available or imputation unnecessary
1 = data available in master record and no data in subunits

no_(wages,emp1,emp2,emp3,sic,county)

0 = data available in either master record or subunits
1 = no data in either master record or subunits

master_(wage,emp1,emp2,emp3,sic,county) Information contained in the master record is stored here

seinunit_type

0 = seinunit="00000"
1 = seinunit~="00000"

04_sein_totals.sas

ever_(multi,wages,emp1,emp2,emp3)

0 = the SEIN never reports data on the 202
1 = the SEIN is a multi unit at some time or reports payroll or employment at some time during the observed period on the ES-202.

sein_(emp1,emp2,emp3,wages)

SEIN level totals for payroll and employment from the ES-202

multi_first_year

The first year when an SEIN appears as a multi unit on the ES-202

multi_first_quarter

The first quarter when an SEIN appears as a multi unit on the ES-202

in_UI

0 = SEIN is not on the UI in a given year and quarter
1 = SEIN appears on the UI in given year and quarter

in_202

0 = SEIN is not on the ES-202 a given year and quarter
1 = SEIN appears on the ES-202 in a given year and quarter

source

1 = UI only
2 = ES-202 only
3 = both UI and ES-202

ever_202

0 = not on ES-202
1 = SEIN appears on the ES-202 at some time during observed period

05_best_vars.sas

best_(wages,emp1,emp2,emp3)

Our best estimate of payroll and employment for a subunit using as much information available in the UI and 202. We use both contemporaneous information and information about the firm in other years and quarters. If information is available in the ES-202 then that data takes precedence over information in the UI.

best_flag

NOTE: The best_flag variable when combined with the structure_fix variable can be used to identify the type of edits and data source of the best_xx variables.

0 = no wage or employment information on the ES-202 or UI
1 = SU, ES-202 wages, but ES-202 employment is zero
2 = SU, ES-202 wages , but ES-202 employment is missing
3 = SU, no ES-202 wages, but ES-202 employment is available
4 = SU, ES-202 wages and employment is greater than zero
5 = SU, no ES-202 wages or employment, UI available
6 = SU, not in ES-202 and UI available
7 = MU, ES-202 wages, but ES-202 employment is zero
8 = MU, ES-202 wages , but ES-202 employment is missing
9 = MU, no ES-202 wages, but ES-202 employment is available
10 = MU, ES-202 wages and employment is greater than zero
11 = MU, no ES-202 wages or employment, UI available

info_202

0 = no wages and employment on 202
1 = wages and no employment on 202
2 = wages and no employment on 202
3 = wages and employment on 202

noemp_202

0 = positive ES-202 employment
1 = employment is not > 0 on the ES-202

emp_202_miss

0 = not in the ES-202 and non-missing ES-202 employment
1 = in the ES-202 and all ES-202 employment is missing.

06_select_records.sas

special_handle

0 = no special handling required
1 = in_UI=1 and in_202=0 and ever_multi=1
2 = in_UI=0 and in_202=1 and impute_data=1
3 = in_UI=1 and in_202=1 and no_data=1 and multi_unit=1
4 = in_UI=1 and in_202=1 and impute_data=1

no_get_data

0 = get_XX=1 for at least one variable
1 = get_XX=0 for all variables

data_avail

0 = no data available
1 = in_202=1 and some subunit data available that period

impute_data

0 = no allocation of master to subunit that period
1 = allocation of master to subunit that period

no_data

0 = data available
1 = no data in master or subunit available that period

get_(wages,emp1,emp2,emp3)

0 = special_handle=0 or special_handle=1 and no subunit wages available in other periods
1 = special_handle>0 and subunit data is available in other periods

(wages,emp1,emp2,emp3)_202

Renamed sein_XX variables on the special_handle_06.sas7bdat dataset. This is necessary in the next program when we match a record with missing subunit information the to another record in another year and quarter.

07_special_handle.sas

qtime_master

Continuous quarter time from 1985 quarter 1 for the record for which we are trying to determine subunit structure.

qtime_first

The first quarter in continuous time that an SEIN appears as a multi unit

year_found

The closest year that contains subunit structure

quarter_found

The closest quarter that contains subunit structure

Stop

0 = record not found
1 = record with subunit structure found

08_distribute.sas

best_(wages,emp1,emp2,emp3)

Update of original values computed in 05_best_vars.sas. Our best estimate of payroll and employment for a subunit using as much information available in the UI and 202. We use both contemporaneous information and information about the firm in other years and quarters. If information is available in the ES-202 then that data takes precedence over information in the UI.

sein_best_(wages, emp1, emp2, emp3)

SEIN YEAR QUARTER summaries of the best_XX variables.

structure_fix

NOTE: The best_flag variable when combined with the structure_fix variable can be used to identify the type of edits and data source of the best_xx variables.

0 = record not selected for structure imputation
1 = record selected for structure imputation

09_mode_sic_naics_county.sas

ein_change

0 = EIN the same for all SEINUNIT's in a QUARTER
1 = EIN different for all SEINUNIT's in a QUARTER

mode_(uisic,naics,county)

The modal value of the variable in an SEIN YEAR QUARTER (unit weighted)

mode_(uisic, naics, county)_emp

The modal value of the variable in an SEIN YEAR QUARTER (employment weighted)

10_sein_wide.sas

Place SIC, NAICS, COUNTY, and EIN in arrays

11_sein_yq_chars.sas

STATE

FIPS code of the state

sic_division

SIC divisions (A, B, C, ..., Z)

(ein, uisic, uinaics, county)_miss1

0 = Variable is not missing
1 = Variable is missing before using information from other quarters.

(ein, uisic, uinaics, county)_miss2

0 = Variable is not missing
1 = Variable is missing after using information from other quarters.

(ein, uisic, uinaics, county)_flag

M issing = No information in other quarters
0 = Variable is not missing in current quarter
> 0 = quarter after the current quarter where replacement value is found
< 0 = quarter before the current quarter where replacement value is found

12_cnty_sic_mlist.sas

No new variables created

13_cnty_sic_tabs_sein.sas

num_sein_yyyyq

Number of SEIN's in the same county / industry cell as the firm itself.

num_sein_min

Minimum number of SEIN's in the same county / industry cell over the whole period

num_sein_max

Maximum number of SEIN's in the same county / industry cell over the whole period

num_sein_mean

Mean number of SEIN's in the same county / industry cell over the whole period

14_cnty_sic_fuzz_sein.sas

uniform1

Random draw from a [0,1] uniform distribution

delta

Random draw from the ramp (triangle) distribution. The name is kept for compatibility with previous programs.

beta1

Random draw from the BETA distribution.

ramp1

Random draw from the ramp (triangle) distribution

fuzz_cat

1 = The draw is from the high fuzz distribution (small cell)
2 = The draw is from the middle fuzz distribution
3 = The draw is from the low fuzz distribution (large cell)

15_cnty_sic_tabs_seinunit.sas

See 13_cnty_sic_tabs_sein.sas

16_cnty_sic_fuzz_seinunit.sas

See 14_cnty_sic_fuzz_sein.sas

J.8 Program Sequence

The program sequence is designed to require the minimum possible interaction from the user. All configuration information is stored in config_dates.sas and config_param.sas. If these files are set up properly than no further user intervention should be required. Executing runall.ksh starts the program sequence.

Config_dates.sas Configuration parameters that vary by state are stored here.
See the User's Guide for more information.

Config_param.sas Macros are stored here.
We use a %include statement at the beginning of each program to set up a standard set of macros and some macro variables that are then available to each program. The config_param.sas file contains all of the above information.

01_read_all.sas Standardizes and reads in state ES 202 data.
The first step is to clean up and standardized data. We allow both state specific and general standardization rules. Any state specific data cleanup rules are placed in config_param.sas and the generic rules are contained in 01_read_all.sas. The idea is that all modifications are made to config_param.sas and none of the actual programs should have to be modified.
We check the following variables; SIC, NAICS, county, SEIN, and EIN.

- SIC missing and 0000 are coded to 9999
- NAICS missing and 000000 are coded 999999

- County missing, 000, 900,994,995,996,998 are coded to 999
- SEIN is checked for characters other then 0-9. Some SEIN's contain letters and the variable sein_bad=1 allows you to determine when that is the case (these SEIN's are often related to another SEIN in the data).
- EIN is also checked for characters other than 0-9. Letters and other ASCII codes are not allowed for the EIN. If any of these characters are encountered then ein_bad=1. We also check to see if the first two digits of the EIN correspond with a valid 2 digit IRS Revenue district code. The current list of codes is derived from the SSEL and information from the IRS. The SSEL contains clean EIN's to the best of our knowledge. EIN's on our state data that are a member of the set of 2 digit IRS Revenue district codes have a positive probability of matching to the SSEL. This list may need to be updated as the IRS adds additional codes over time. We also create an ein_defect variable that indicates what problems if any are found with the EIN.

02_num_records.sas Count the number of records for each SEIN in a given year and quarter. Check whether data is missing for all the records of an SEIN in a given year and quarter.

This program creates many of the measures that will be used later to determine the record structure for an SEIN. Unfortunately, the record structure of a multi-unit SEIN is not consistent. An seinunit equal to "00000" is either the only record for a single unit or the master record for a multi-unit. The sub-units an SEIN should be in the range "00001" to "99999".

However, the data we actual receive contains many variations on the above theme. The variables created here will allow me to create a consistent data structure from the variations on the intended structure that we actually receive from the states.

For the first record of an SEIN we set up initial values for the variables and check whether seinunit="00000". If seinunit~="00000" then we assume that there is no master record and the record represents information about an establishment. This distinction is important when creating the all_miss_XX series of variables. These variables are intended to represent when all of the data for a given SEIN is missing except for the data in the master record. We will handle the data in the master record separately in the next program.

03_rm_master.sas Eliminate the master record while preserving any information in the subunit records. Create multi-unit indicator and establishment counts.

This program is extremely important since it creates the record structure that will be used from this point forward. If this process is not done carefully than important information about the SEIN may be destroyed.

We break the processing tasks up into three distinct groups.

1. SEIN's with only one record
2. The first record for SEIN's with more than one record
3. The second record and beyond for SEIN's with more than one record

Detailed Explanation

1. SEIN's with only one record must be single units. Therefore we set the num_estabs=1 and initialize all other variables. If all_miss_XX=1 then we set no_XX=1 (the subunit is the master record in this case). There is also no need to allocate master record information to the subunits.
2. Initialize all variables and if the master record is present then store any information in the master record in the master_XX variables. Calculate the number of establishments if there is a master record present by subtracting one from the number of records calculated previously. If the number of records is equal to two and one of the records is a master record that this situation is inconsistent with the defined record structure. The number of establishments is set equal to one in this case. This situation likely occurs when a multi-unit shrinks and only one unit is left. The master record is not removed immediately since it is unclear whether the SEIN will remain a single unit or return to multi-unit status. If there is information in the master record and there is no information in the subunits then set the impute_XX flag. If there is no information in the master and the subunits then set the no_XX flag. Finally, if there is no master record then calculate the number of establishments as equal to the number of records. If the number of establishments is greater than one then set multi_unit=1.

3. The second record and beyond are output without modification unless the impute_XX flag is set. In this case, information from the master record is allocated to the subunits. Since we have no additional information at this point about the structure of the SEIN we allocate any payroll or employment equally across the subunits. Further along in the sequence we use additional information available in years and quarters when the subunits report payroll and employment to improve the allocation.

04_sein_totals.sas Create the SEIN level totals, indicators for the appearance of wage and employment data, and merge the result with UI SEIN level data.

In the previous program we created an establishment level dataset. Now we are able to sum over the establishment level records and create SEIN totals. We also want to check and see if the SEIN was ever active during the time period that we observe the firm. This information will be used later when we improve our allocation of master record information to the subunits. Next, merge UI SEIN totals with SEIN totals from the ES-202 and create indicators for each SEIN YEAR QUARTER that show what data is available. Finally, merge the combined UI and ES–202 data with a list of the SEIN's that appear on the 202. This allows me to create an indicator that shows whether an SEIN ever appeared on the 202. The 202, not the UI contains information on the structure of employment at the subunits, thus it is important to know whether that information may be available.

05_best_vars.sas Create a set of best_XXX variables.

The best_(wages and employment) variables incorporate information from both the UI and the ES-202. This analysis is done at the SEINUNIT level. We examine each record to find out what type of information is available on the ES-202. And classify a record into one of four possible categories using the variable info_202. We look at single-unit and multi-unit records separately. For single-units it is relatively easy to fill wages and employment with information from the UI. For multi-units we do a naive allocation that is improved upon for some firms in 07_special_handle.sas.

UI data is used in the following situations

- ES-202 employment is missing, but ES-202 payroll is reported, then UI employment is used (if ES-202 employment is zero, then UI employment is NOT used since this may be a correct report and we do not have enough information to determine if it is incorrect).
- ES-202 payroll is zero and ES-202 employment is positive then UI payroll is used.
- If ES-202 payroll and employment is zero then UI payroll and employment are used.
- If both ES-202 payroll and employment are missing then UI payroll and employment is used.

06_select_records.sas Select the records that have enough information available to enable subunit structure to be imputed.

There are four main classes of records that may benefit from using information on subunit structure in other quarters.

1. Records that appear only in the UI in a given year and quarter but appear previously in the ES-202 as a multi unit.
2. Records that appear only in the ES-202 and master record data was allocated to the subunits.
3. Records that appear in both the UI and the ES-202 but have no information in the ES-202 and are a multi unit.
4. Records that appear in both the UI and the ES-202 and master record data was allocated to the subunits

However, not every case that meets the conditions above will have enough prior information to allow an impute to take place. The firm must have been a multi-unit prior to the date that a record met one of the conditions above. The firm must also have valid data in another quarter than can be used for the impute. Only about half of the possible records meet this criteria for Illinois. All SEINUNIT records selected for imputation are consolidated to SEIN YEAR QUARTER records. The complete firm history for any SEIN that meets the criteria for special handling is kept in a separate dataset and is indexed for easy access (special_handle_history_06.sas7bdat).

07_special_handle.sas Look for subunit structure in off years and quarters.

For each SEIN YEAR QUARTER record selected for structure imputation we look in both previous and future quarters for a period where the firm reported payroll and/or employment for the SEINUNIT's. The closest quarter is kept for further processing. In Illinois about 80% are found within +/- four quarters.

08_distribute.sas Use the record structure identified in the previous program to allocate payroll and employment. Interleave the new record structure with the existing data.

The process of imputing the record structure of an SEIN in a given year and quarter is completed here. We use SEIN level information on employment and payroll from the current quarter combined with distribution of employment / payroll across the SEINUNIT's information learned from off quarter reports to allocate payroll and employment to the subunits. We combine the newly imputed record structure with the old data to create the final record structure.

NOTE: The best_flag variable when combined with the structure_fix variable can be used to identify the type of edits and data source of the best_xx variables.

09_mode_sic_naics_county.sas Calculate the modal SIC, NAICS, and county for each SEIN YEAR QUARTER.

First we keep only the variables necessary to calculate the mode. We keep employment variables also to calculate the employment-weighted mode. The resulting dataset is relatively narrow and is less costly to sort then the complete dataset.

Using SIC as an example, the data is first sorted by SEIN YEAR QUARTER SIC. The number of SEINUNIT's and employment is calculated for each set of subunits that are in the same industry. The SIC code with the most SEINUNIT's or EMPLOYMENT is the mode.

The modal values for each SEIN YEAR QUARTER are then merged together to create one output dataset.

10_sein_wide.sas Transform the data from long to wide format.

In this step we take the dataset created in program nine and basically transpose the data for each SEIN. Instead of a column for each variable such as SIC and the observations for each SEIN in the rows we transform the data so that there is one record for each SEIN with the data in columns. This structure allows me to load all the values of SIC for a given SEIN into an array. This array can then be used to search through all of the SIC data for a firm (Useful when trying to replace missing values).

11_sein_yq_chars.sas Use the long dataset to fix as many missing values as possible for SIC, NAICS, county, and EIN. Perform other clean-up tasks.

SEIN level information is brought together here and various edits are performed. The result of this processing is almost identical to the final version of the file except that the fuzz factors have not been attached.

First we merge the SEIN level data on payroll, employment, and number of establishments with the wide data on SIC, NAICS, COUNTY, and EIN.

Arrays are set up that point to the SIC, NAICS, COUNTY, and EIN information.

This data is then processed by a general search routine that looks in off years and quarters to replace current data if it is missing.

12_cnty_sic_mlist.sas Get a list of the county*SIC divisions in the state.

The distribution we use to draw the fuzz factors varies depending on the number of other firms in the same county / industry cell. For example, if there is only one restaurant in the whole county then we need to distort the data more than if there where thousands of restaurants in the county. This program sets up the rows of the lookup table that will be used to assign fuzz factors.

The industry categories are known, but the counties vary from state to state. A dataset from a frequency procedure is used to get the list of counties in the data. This dataset is then used to create the list of county / industry rows in the table.

13_cnty_sic_tabs_sein.sas Fill the cells in the table generated in the previous program using the SEIN data.

This program selects the records for all of the SEIN's in a given YEAR and QUARTER. The number of SEIN's in a given county/industry cell is counted and then merged onto the master county /industry list dataset. This process is executed repeatedly for each YEAR and QUARTER, building up the table column by column.

Various statistics are calculated for the county / industry cells.

14_cnty_sic_fuzz_sein.sas Use the table created in program 13 to give each SEIN a fuzz factor.

An SEIN has a constant fuzz factor over time. In order to be conservative (apply more fuzz) we use the minimum number of SEIN's in the cell over the whole period as our criterion for determining the fuzz factor.

A simple lookup is done and the fuzz factor is calculated using both the triangle (ramp) and beta distributions.

The fuzz factor for each SEIN is stored in a separate file and should not be changed when data updates are received.

The final SEIN YEAR QUARTER file is output.

15_cnty_sic_tabs_seinunit.sas Fill the cells in the table generated in the previous program using the SEINUNIT data. See explanation for program 13.

16_cnty_sic_fuzz_seinunit.sas Use the table created in program 15 to give each SEINUNIT a fuzz factor. See explanation for program 14.

J.9 Setting up the program sequence for a new state

Step 1. Edit update_file.ksh by adding a new "cp" line for the state and add the two letter state abbreviation to the last line in the file (begins with "echo").

Step 2. Create a directory in /data/master/Employer/conversions/current named ss (ss is the two-letter state abbreviation for the state you want to add.

Step 3. Create a temporary working directory of your own choosing.

Step 4. Run the script update_all.ksh and the programs will be automatically transferred to the new directory.

Step 5. Manually copy the file config_dates.sas to the new directory. Config_dates.sas contains all of the state specific configuration information. This file is NOT copied or updated when the update_all.ksh script is run, thus preventing you from accidentally erasing the configuration information.

Step 6. Edit config_dates.sas

(a) Set up the macro variables st, yfirst, qfirst, ylast, and qlast.

(b) Set the macro variable einavail=ein if EIN is available (empty string if not available).

(c) Set the macro variable listsize=$< number >$. Number should be large enough that at least some records for even small categories will show up in print statements (maybe 10-20% of the data).

(d) Set up the libnames

(e) Working (temp directory).

(f) Mastsein (final output location for SEIN based file).

(g) Mastunit (final output location for SEINUNIT based file).

(h) Uidata (location of UI SEIN YEAR QUARTER totals).

(i) The data directories containing unedited ES-202 are automatically assigned a libname as long as the standard naming convention is used.

The only modification here is that the available data's starting and ending year and quarter for the specified state as well as state abbreviation and fips code. If EIN data is available, then specify it.

Appendix K

Technical details of Job Flow, Worker Flow, and Earnings Statistics Programming

The following briefly describes the programs used in the production of the EDE estimates.

jobflow01.sas (a) use EHF (Appendix F on page 160) and ICF (Appendix G on page 163) to create a complete work history for each individual; (b) define age categories over which to compute job and worker flows; (c) compute individual-level flow statistics.

jobflow02.sas Calculate job flow statistics at the "firm-level," i.e. for each *SEIN*, by year and quarter and by sex and age group.

jobflow03.sas (a) generate all intermediate statistics necessary for computing final statistics; (b) check identities for all relevant job and worker flow statistics.

jobflow04.sas (a) add UI-system county and industry information for each firm (*SEIN*) from the employer characteristics file (ECF); (b) create a new series of variables equal to the original variables multiplied by *SEIN* specific noise (or fuzz) factors.

jobflow05.sas Produce actual and noise adjusted flow statistics at the county and industry level.

jobflow06.sas (a) for each file (year-quarter-county and year-quarter-industry), produce disclosure status flags for each variable; (b) calculate the percentage difference between true and noisy values for each variable.

jobflow07a.sas – jobflow07f.sas Rake employment dynamic estimates to be consistent with BLS published county and state totals from CEW. Output data files contain observations by year and quarter for: (a) non-missing county codes (e.g., codes which do not correspond missing county identifiers or other measures of geography), (b) valid county codes for which the BLS raking totals are positive in the current and subsequent period, and (c) state totals (indicated by county='000'). Tabulated estimates are flagged where cell suppression or distortion occurs.

jobflow08a.sas - jobflow08f.sas Rake employment dynamic estimates to be consistent with BLS published industry division and state totals. Output data files contain observations by year and quarter for: (a) all industry divisions including "other" and (b) state totals (indicated by *sic_division*=' ', blank). Tabulated estimates are flagged where cell suppression or distortion occurs.

Appendix L

Technical details of Disclosure Proofing Methods

Here, we provide a brief description of the programs used to construct the control totals for the raking process.
Make all the changes here.

01.01.rake.totals.sas

Program reads in county data from 1997 to present and creates an output data set at the quarter, county level for each year and state used in the job flow sequence.

01.02.rake.totals.sas

Program reads in the historic (1990-1996) county data and creates an output data set at the quarter, county level for each year and state used in the job flow sequence.

01.03.rake.totals.sas

Program reads in industry data from 1997 to present and creates an output data set at the quarter, industry division level for each year and state used in the job flow sequence.

01.04.rake.totals.sas

Program reads in the historic (1990-1996) industry data and creates an output data set at the quarter, industry division level for each year and state used in the job flow sequence.

01.05.rake.totals.sas

Program reads in state totals from 1997 to present and creates an output data set at the quarter, state level for each year and state used in the job flow sequence.

01.06.rake.totals.sas

Program reads in the historic (1990-1996) state totals and creates an output data set at the quarter, state level for each year and state used in the job flow sequence.

In all programs, year, quarter, state, first month employment, and either industry or county variables are retained; output data files conform to a uniform standard so that the concatenated yearly files may be easily accessed by the job flow sequence.

The input data to programs 01.02.rake.totals.sas, 01.04.rake.totals.sas, and 01.06.rake.totals.sas originate from a variety of BLS sources, though, all refer to the BLS CEW series; input data to programs 01.01.rake.totals.sas, 01.03.rake.totals.sas, and 01.05.rake.totals.sas are currently acquired from the BLS CEW ftp site at

ftp://ftp.bls.gov/pub/special.requests/cew/.

A detailed list is provided in Chapter M on the next page. Annual updates to the BLS CEW public use data should be downloaded from this location. Documentation is stored locally in /data/doc/bls-public.

Appendix M

Data Series Used for Raking

The following list describes the public use BLS data series used for raking purposes. The series are identified by codes, the general form of which is

```
[series prefix][fips state][fips county][datatype code][size code][ownership
                           code][industry code]
```

where

series prefix	=	3 characters
fips state	=	2 characters
fips county	=	3 characters
datatype code	=	1 character
ownership code	=	1 character
industry code	=	6 characters

The following series is used in the county raking:

```
EWU[fips state][fips county]0000Z
```

The series listed on the following pages are used in the industry division raking:

EWU[fips state][fips county]10D27
EWU[fips state][fips county]10E42
EWU[fips state][fips county]10E43
EWU[fips state][fips county]10E49
EWU[fips state][fips county]10G53
EWU[fips state][fips county]10G54
EWU[fips state][fips county]10G58
EWU[fips state][fips county]10G59
EWU[fips state][fips county]10H60
EWU[fips state][fips county]10H61
EWU[fips state][fips county]10H63
EWU[fips state][fips county]10H64
EWU[fips state][fips county]10H65
EWU[fips state][fips county]10I70
EWU[fips state][fips county]10I73
EWU[fips state][fips county]10I79
EWU[fips state][fips county]10I80
EWU[fips state][fips county]10I82
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EWU[fips state][fips county]10J94
EWU[fips state][fips county]10J95
EWU[fips state][fips county]10J96
EWU[fips state][fips county]10J97
EWU[fips state][fips county]20A07
EWU[fips state][fips county]20C17
EWU[fips state][fips county]20D23
EWU[fips state][fips county]20D38
EWU[fips state][fips county]20D39
EWU[fips state][fips county]20E47
EWU[fips state][fips county]20F51

EWU[fips state][fips county]20G58
EWU[fips state][fips county]20H62
EWU[fips state][fips county]20I70
EWU[fips state][fips county]20I72
EWU[fips state][fips county]20I73
EWU[fips state][fips county]20I76
EWU[fips state][fips county]20I79
EWU[fips state][fips county]20I80
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